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OPERATION & MAINTENANCE ENVIRONMENTAL IMPACT STATEMENT FOR THE --ETC(U)
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This final supplement discusses activities proposed for the extended operation of the locks at Sault Ste. Marie, Michigan, beyond 15 December, the historical seasonal closing of the facilities. The proposed extension of operations would allow for continued use of the lock facilities to approximately 8 January. It provides summary of mitigative measures associated with sustaining the navigation season considered to be integral in the social and economic well being of the Great Lakes Basin regulation and the nation.
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20. ABSTRACT (Continued).

The extended operation of the federal facilities of the duration anticipated would have no known direct, long-term major adverse environmental effects on the project area. However, sufficient information does not exist to provide confidence that subtle, cumulative impact will not occur resulting in long-term major adverse effects.

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231

NCEED-ER

26 October 1979

The inclosed Final Supplement to Operations and Maintenance Environmental Impact Statement of the Federal Facilities at Sault Ste. Marie, Michigan, Addressing Limited Season Operation Extension is transmitted for your review in compliance with the Council on Environmental Quality's GUIDELINES FOR STATEMENTS ON PROPOSED FEDERAL ACTIONS AFFECTING THE ENVIRONMENT.

The Final Supplement discusses activities proposed for the extended operation of the locks at Sault Ste. Marie, Michigan, beyond 15 December, the historical seasonal closing of the facilities. The proposed extension of operations would allow for continued use of the lock facilities to approximately 8 January. It would provide a longer navigation season and economic benefits for both the user of the waterway and the consumer of transported goods.

Public information copies are being furnished to appropriate state, regional and metropolitan clearinghouses, as well as to Federal, state and local agencies and conservation/environmental groups with which the statement was coordinated. Single copies are available to concerned individuals upon request.

Any comments you have regarding this statement should be made by 2 December 1979, directed to this office, ATTN: NCEED-ER, and you may wish to provide a copy to:

Environmental Protection Agency
Room 53, West Tower
501 M. Street, S.W.
Washington, D.C. 20460.

Sincerely,

P. McCALLISTER
Chief, Engineering Division

1 Incl
As stated

FINAL SUPPLEMENT TO THE FINAL ENVIRONMENTAL STATEMENT

OPERATIONS, MAINTENANCE, AND MINOR IMPROVEMENTS

OF THE FEDERAL FACILITIES AT

SAULT STE. MARIE, MICHIGAN

ADDRESSING LIMITED SEASON OPERATION EXTENSION

OCTOBER 1979

Prepared by:
U.S. ARMY ENGINEER DISTRICT
Detroit, Michigan

For further Information
Contact: Chief Environmental Resources Branch
313-226-6752

Address: U.S. Army Engineer District - Detroit
Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

SUMMARY

SUPPLEMENT TO THE OPERATION AND MAINTENANCE
ENVIRONMENTAL IMPACT STATEMENT
FOR THE FEDERAL FACILITIES AT
SAULT STE. MARIE, MICHIGAN
ADDRESSING LIMITED SEASON EXTENSION OF OPERATION
OCTOBER 1979

( ) DRAFT (X) FINAL ENVIRONMENTAL STATEMENT

RESPONSIBLE OFFICE: U.S. Army Engineer District, Detroit
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1. NAME OF ACTION: (X) ADMINISTRATIVE ( ) LEGISLATIVE

2. DESCRIPTION: The proposed Federal action is to allow for annual consideration of extending the operation season of two of the four existing locks beyond the historic closing date of 15 December. The period proposed for extended navigation under this plan would be from about 1 April to 8 January, plus or minus one week. Sustaining the navigation season and necessary mitigative measures associated with it are considered integral to the social and economic well-being of the Great Lakes Basin population and the Nation. Some new and proven structures and equipment would be required to insure extended season operation and a navigable environment. Specific requirements for evaluating the time for closure have been developed based on a correlation between Freezing Degree Days and ice cover conditions causing difficulty for navigation. Nothing in this supplement abrogates the need for annual consideration of extending lock operations beyond 15 December as is required by regulation. If a need to open does not exist, or if information learned in any future year shows adverse impacts to outweigh expected benefits, the locks would be closed on 15 December. This supplement does not replace the closure regulation--it only provides for equal consideration of impacts with economic benefits when the required decision is made of how long the locks should be open after 15 December if needed by commerce.

3. (a) ENVIRONMENTAL CONSEQUENCES: Extended operations of the Federal facilities of the duration anticipated would have no known direct, long-term major adverse environmental effects on the project area. However, sufficient information does not exist to provide confidence that subtle, cumulative impacts will not occur, resulting in long-term major adverse effects. For this reason, studies and monitoring efforts have been and will continue to be undertaken to

provide new information for use in the decision making process each year of when to close. Known adverse effects primarily result from the secondary actions such as vessel movement and icebreaking, and beneficial impacts include continuation of the development of the Great Lakes basin, and to a greater extent, development of the national economy through enchancement of navigational dependent enterprises.

(b) ADVERSE ENVIRONMENTAL EFFECTS: Impacts related to the implementation of the mitigative measures would be primarily limited to turbidities and berthic disturbance resulting from the placement of the Little Rapids Cut ice boom, rock-filled scow and craneweights, and vessel operation. Possible long-term cumulative effects could result from the repeated short-term disturbance to habitats of aquatic overwintering organisms and three or four weeks disturbance to cross channel migration of terrestrial animals. A potential adverse effect would be realized, as it would in any season, should a vessel accident result in a spill of oil or hazardous substances. Since there is not sufficient information for quantification of impacts, a "worst case" approach has been taken in describing possible impacts. Efforts at obtaining necessary information are continuing.

4. ALTERNATIVES: The plan selected as the most feasibile is the extension of the season to approximately 8 January employing the following mitigative measures: 1) Little Rapids Cut ice boom, 2) the installation of a rock-filled barge and craneweights, 3) the utilization of a bubbler-flusher at the Sugar Island ferry, and 4) the provision for a new airboat or alternate means of transportation to provide transportation assistance for the residents of Lime Island. Alternatives to the Selected Plan are as follows:

1. No Action. This entails opening the locks on approximately 1 April, and closing about 15 December. These dates are established by requlations which recognize factors such as weather conditions, lock maintenance requirements, and needs of commerce. Technical advances and commerce needs in recent years have made these historic limitations generally unduly restrictive to navigation.

2. Extension of the season to about 25 December. This alternative would normally require no mitigative measures, as the locks would be closed when an alternative mode of transportation for Lime Island residents is required.

3. Extension of the season to about 30 December. This alternative would normally require that an alternative mode of cross channel transportation be furnished to the residents of Lime Island. Lock

operation would cease when the Sugar Island ferry became unable to operate due to ice jamming in Little Rapids Cut as a probable consequence of no means of ice stabilization in Soo Harbor (no ice boom at Little Rapids Cut).

4. Extension of the season to 31 January + 2 weeks. Mitigative measures required are the same as those of the Selected Plan plus a need for other measures as cited in the Chief of Engineer's Report, dated 16 November 1977, including navigation aids, shore unit and aerial reconnaissance, ice jam monitoring program, and measures for shore erosion and shore structure protection (contingent that prior to initiation of construction of the shore protection measures, the Secretary of the Army will notify the Congress of the extent and cost of the measures). The duration of the navigation season would extend about 3 weeks beyond the Selected Plan.

5. Extension to year-round lock operations. Major environmental studies at an estimated cost of about $150 million are considered necessary prior to such an extension (COE, March 1979). Authority and funding do not now exist for such studies, but a report has been forwarded to Corps of Engineers' higher authority recommending that the necessary studies be undertaken.

5. AREAS OF CONTROVERSY: The proposed season extension is a very controversial issue due to both known and unknown (but perceived) adverse effects. Known effects include damage to shoreline structures, shore erosion, disturbance to several forms of winter recreation, and disturbance of benthic habitat. Unknown (but suspected or potential) effects include possibility of oil or hazardous material spills in ice conditions, long-term changes in the fishery, cumulative effects on the aquatic food chain, disturbance of wetlands, and resultant economic effects on the tourism industry. Sufficient information does not now exist to provide quantified definition of these suspected impacts, and the cost of obtaining the necessary information is exhorbitant and considered unreasonable for the limited 3 to 4 week extension under consideration in this document. Another significant area of controversy is the issue of the Government, rather than industry paying for the system improvements.

6. UNRESOLVED ISSUES: The U.S. Fish and Wildlife Service has recommended that the season not be extended because of the current

lack of definitive information. In the alternative, the Service has requested a 3 year moratorium after the winter of 1979-1980 so that baseline information on environmental conditions can be collected in the absence of navigation. The Corps' has no authority to agree at this time to mandate closure of the locks on 15 December. The needs of commerce must be considered each year. On the request for a 3 year moratorium, the Corps does not have authority to agree at this time to such a condition which might preclude actions considered essential to the economic health of the Nation. Consideration would be given each year to the need for study of "without project" conditions, and this will be weighed with the known impacts and the economic needs for continued operation on an annual basis. The Michigan United Conservation Clubs has taken the position that any extension beyond 25 December, depending on ice and weather conditions, is unacceptable because of lack of full understanding of potential impacts, no benefits to recreation, and taxpayers subsidizing the shipping interests. MUCC has indicated that a lawsuit may be initiated to stop the proposed extension. The Corps does not agree with MUCC's evaluation of the situation, and attempts at resolution of issues with MUCC have not been successful. The Michigan Department of Natural Resources has made a determination that the proposed action is not consistent with the States approved Coastal Zone Management Program. The Corps has requested reconsideration of this finding based on additional information furnished. Copies of this correspondence are shown in Appendix I. As of the date of filing this document, no reply to the Corps 1 October letter has been received. Resolution of this issue will continue to be sought.

7. COMMENTS RECEIVED: Approximately 1,500 copies of the draft supplement were distributed to all known interested parties. Agencies and others providing comments include:

U.S. Department of Agriculture	- Soil Conservation Service
U.S. Department of Commerce	- The Assistant Secretary for Science & Technology
	- National Oceanic and Atmospheric Administration (NOAA)
	- Maritime Administration (MARAD)
U.S. Department of Health, Education & Welfare (HEW)	- Public Health Service
U.S. Department of the Interior	- Office of the Secretary
U.S. Department of Transportation	- Federal Highway Administration

U.S. Federal Energy Regulatory Commission - Washington, D.C.
- Chicago Regional Office

U.S. Environmental Protection Agency (EPA)
City of Milwaukee, Wisconsin
City of Superior, Wisconsin
Indiana State Clearinghouse
Ohio State Clearinghouse
Pennsylvania Department of Environmental Resources
Pickford Township
Michigan Department of Transportation
Michigan Department of State - History Division
Michigan Department of Natural Resources (MDNR) - Director
- Division of Land Resources

Consolidated Rail Corporation (CONRAIL)
Environmental Research Group, Inc.
Lake Carriers' Association
Lake Huron Property Owners' Association
Michigan United Conservation Clubs (MUCC)
Save The River, Inc.
United States Steel Corporation

8. DRAFT SUPPLEMENT TO EPA. 13 July 1979.
FINAL SUPPLEMENT TO EPA. 26 October 1979

TABLE OF CONTENTS

I. PURPOSE [illegible]

1.01 This document is a supple[illegible] Final Environmental Statement, "Oper[illegible] Minor Improvements to the Federal Fa[illegible] Marie, Michigan." Provided within is [illegible] that was not incorporated in the above docume[illegible] hanges or new needs and requirements.

1.02 The St. Marys River is the natural outlet from Lake Superior and is situated along the international boundary between Canada and the United States. With certain navigation improvements, it provides the connecting channel for commercial vessels between the ports of Lake Superior and those of the other Great Lakes, the St. Lawrence River, and foreign nations involved in trade with the United States.

1.03 There is a section in the upper St. Marys River known as the St. Marys Rapids where the water level falls about 22 feet, creating a source of hydroelectric power for three power plants - two in the United States and one in Canada. In order for ships to proceed through this area, Federal lock facilities were built at Sault Ste. Marie, Michigan, and a lock was built at Sault Ste. Marie, Ontario. The U.S. Army Corps of Engineers is authorized by the Congress to operate and maintain the Federal lock facilities at Sault Ste. Marie, Michigan, in order to provide for recreational and commercial vessel passage through the natural barrier of the St. Marys Rapids.

1.04 The existing Federal facilities at the Sault Ste. Marie (Soo) are the locks and entrance channels, information center, observation platforms, warehouse, parks, hydroelectric power facilities and power canals, water compensating structures, plant dockage, Little Rapids Cut Ice Boom, and public facilities. These facilities require periodic maintenance to keep them operationally functional to their design specifications. These facilities are operated and maintained to provide for the needs of deep draft commerce on the Great Lakes-St. Lawrence Seaway navigation system.

1.05 The operations of the Federal lock facilities at the Soo have normally ceased during the winter season because of the cessation of vessel traffic, and adverse weather conditions. The reason for closure has historically been dependent on the inability of ships to reach the lock, not an inability to operate the locks. Until about 1967, the duration of this period historically averaged from 15 December to 1 April. This closure is not required by law, and during the last eight (8) years, the locks have been operated for as long as year-round under the Extended Season Demonstration Program. The authority for the Demonstration Program expired 30 September 1979. Prior to the Demonstration Program, winter navigation was extended during periods when mild weather persisted and in times of emergencies. The operational opening and closing dates are established by regulation (Paragraph 1.20). The regulation provides for exceptions.

1.06 Development of [illegible] moisture content, in [illegible] iron ore without freezing [illegible] taconite pellets economically [illegible].

1.07 In response to a resolution [illegible], an advisory committee established [illegible] the [illegible], an Interim Winter Board has been [illegible]. [illegible] composed of representatives of the Corps, the U.S. [illegible], the Great Lakes Commission, the States of [illegible], would coordinate winter navigation season closure determinations and potential agency programming activities.

1.08 Commercial vessel activities [illegible] result in greater utilization, not only of [illegible] in the locks, but also of private investment in [illegible] facilities, and vessels. [illegible] navigation services resort, [illegible] alternatives, the cost of which, in turn, is passed onto consumers. Alternative transportation [illegible] cargo than does waterborne commerce [illegible]. [illegible] a complex relationship with the [illegible] employment. Significant economic benefits could be gained if the season for lock operation were extended to 8 January plus or minus one week (Table II-2).

PROJECT DESCRIPTION

1.09 The proposed Federal action is to extend the seasonal operation of the navigation locks to 8 January ± 1 week to accommodate the reasonable demands of commercial interests and to protect the environment. Closure of navigation before 15 January [illegible] on consideration of the [illegible] below:

(1) Insufficient traffic to economically justify operation of the locks.

(2) Development of navigationally significant ice, [illegible], environmentally detrimental ice,* evidenced by the simultaneous occurrence of the following 3 conditions:

i - Mature ice exists shore to shore on Lake [illegible].

ii - The observed accumulation of Freezing Degree Days (FDD) is 550 or greater as measured at Sault Ste. Marie, Michigan; and

iii - The seven day forecast of accumulation of FDD is [illegible] additional 100 or more.

*Assumed relationship - see paragraph 4.02

1.10 The procedure which will result in a decision of when to close the locks includes several steps and involves other agencies. Data on the factors to be considered in a closure decision as described in paragraph 1.09 above, will be provided by the U.S. Army Corps of Engineers, U.S. Coast Guard, and the shipping industry. The Detroit District, Corps of Engineers will consolidate this information and, when the limits defined in paragraph 1.09 are reached, will notify all members of the Interim Winter Board. The Interim Winter Board will consider and discuss all the related factors and make a recommendation. Any decision to set the date of closure earlier than 15 January will be made by the Division Engineer, North Central Division, U.S. Army Corps of Engineers. In no event, other than a declaration of emergency, will the locks be opened after 15 January.

1.11 These factors were selected because of a useful correlation between the accumulation of freezing degree days (FDD) and navigationally significant ice (Snider-NOAA). This would apply to a point of minimal physical impacts based on the potential for significant environmental adverse effects resulting from physical impacts due to ships encountering difficulty in navigation.

1.12 The decision of whether or not to operate beyond 15 December must be re-made each year based on current knowledge of impacts and the demands of commerce. Any extension of navigation must be economically, engineeringly, and environmentally feasible. As additional information is developed from monitoring or other environmental studies, it would be considered in the decision making process for determining when to close the locks in each succeeding season as required under existing regulations. This allows for continuing consideration of impacts for use of mitigation, should that be found necessary, or for closing the locks earlier, should that be found necessary.

1.13 The factors to be considered for closure at the Sault Ste. Marie locks are proposed for inclusion in this year's Operational Plan for the St. Marys River. This plan has been used and updated annually for the past five years (COE, Nov 79). It is coordinated among and implemented by various Federal, State, local and private entities having responsibilities and concerns in the Soo area. The Winter Navigation Board has supervised the entire plan in the past. The purpose of the plan is to permit as near normal operation as possible in the entire St. Marys River while allowing commercial navigation to continue to no later than 15 January. Past operational plans have included closure considerations similar to that proposed for the Soo, with Sugar, and Neebish Islands as key locations. Other items included in the Plan have been procedures for emergency island transportation, icebreaking and ice management, communication, and names of implementing agencies.

1.14 Other operational plans associated with winter navigation on the St. Marys River are as follows:

a. NCE OP No. 3-78, Soo Harbor Ice Jam Alert Program

b. Great Lakes Coastal Region Oil and Hazardous Substance Contingency Plan (USCG)

c. Joint U.S. Coast Guard-Canadian Coast Guard Guide to Great Lakes Navigation

d. Domestic Icebreaking Plan, Annex W to CCGNine Operation Plan 1-FY

e. Operation Order CCGNine NO. 3-FY: Operation Taconite

1.15 Residents of Lime Island (approximately 10 adults) generally are no longer able to use a vessel for transportation across the shipping channel at some date between 15 and 25 December, due to developing ice conditions. Transportation after this time, in the absence of shipping, has taken place over the ice via foot, snowmobile, or other means. If shipping continues past this time, over-ice transportation is no longer possible and a mitigative measure of an alternative mode of transportation would be required. An airboat or helicopter are feasible alternate modes which could be required to maintain cross channel travel. The airboat or helicopter would continue to operate until over-ice transportation could be achieved by island residents. Under the Demonstration Program, an airboat was provided to accomplish this ser ice. That airboat has exceeded its useful life and a new, improved airboat or alternate mode would be needed. If no reasonable alternative mode of transportation is available, lock operation would be halted when ice conditions become too severe for continued operation of the existing vessel used for ferry service during most of the year.

1.16 With termination of the Demonstration Program, the mitigative action of an alternative mode of transportation for Lime Island residents would not be provided by the Corps of Engineers for winter of FY 80. This mitigative action would have to be implemented by some other entity in order to extend the navigation season.

1.17 Prior to the extended navigation Demonstration Program, sufficient ice cover has developed in Soo Harbor to form an ice bridge at the head of Little Rapids Cut near or soon after 25 December. This ice bridge, in the absence of shipping, has largely prevented ice from moving into the Little Rapids Cut and interfering with navigation of the Sugar Island Ferry. If shipping continues, the ice bridge is broken and ice can move into the Cut and halt or interfere with ferry operations. Under normal winter conditions,

with shipping, interference usually begins to occur about 25-30 December. To prevent this problem, certain mitigative measures are required. The ice field must be stabilized with an ice boom and two temporary structures. Since some ice will pass the boom, a bubbler flusher is required at the mainland ferry dock to dislodge ice floes which may accumulate there. The mitigative action, Sugar Island bubbler flusher, has not been funded by Congress and would not be provided by the Corps of Engineers for the season of FY 80. It would, therefore, need to be implemented by some other entity in order to extend the navigation season. These mitigation measures were proven satisfactory under the Demonstration Program. If these required measures are not available, lock operations would be discontinued when moving ice conditions caused by vessel passages begins to delay or stop ferry operation.

1.18 The Little Rapids Cut Ice Boom System, including Ice Stabilization Structures, has independent utility and value whether there is an extension of the navigation season or not. The ice bridge in Soo Harbor can be broken up by weather conditions or by local vessel traffic which is not transitting the locks. The boom system has, in the past, been addressed in assessments and negative declarations (Findings of no Significant Impact). The true value (and independent utility) of the boom system is that it reduces the possibility of ice jams, thereby reducing the possibility of flooding and power loss from the hydropower plants on the river, and reduces the adverse effects of natural ice conditions on the Sugar Island Ferry. The boom system will be installed to accomplish these purposes, whether or not there is an extension of the navigation season. This installation will be the subject of an Environmental Assessment and Finding of No Significant Impact which will be prepared by the Corps of Engineers prior to installation. A new assessment is required because previous assessments addressed only short-term installation. No new information has been found that would lead the Corps to believe that an environmental impact statement would be required for reinstallation of the boom on an annual basis.

1.19 On or about 8 January, ice conditions typically could worsen to the point where continued shipping increases the magnitude, extent, persistence, and/or probability of environmental consequences. Mitigation measures and an environmental appraisal program have been recommended in the Interim Survey Report No. 1, Great Lakes-St. Lawrence Seaway Navigation Season Extension Study (March 76). The report recommends navigation season extension to 31 January plus or minus 2 weeks. The report also recommends long-term or permanent installations for mitigation which may require additional authorization before construction could take place. Therefore, operation of the locks would not be continued beyond 8 January, +/-one week, without preparation of a supplement to the FEIS (emergencies excepted as covered by the regulation).

AUTHORITY

1.20 The Division Engineer has conditional authority to operate the locks as provided in TITLE 33 of the CODE OF FEDERAL REGULATIONS, Section 207.440(u). Changes in the opening and closing dates of the lock facilities are considered annually to meet reasonable demands of commerce. Such considerations include weather and ice conditions, maintenance requirements, environmental considerations, and other factors related to operation. A request by commercial users must be made on or before November 1. This decision must be made each year, and the completion of this supplement to the EIS should not be construed as negating the provisions of the regulation. It only permits the regulation to be used in full consideration of impacts as required by NEPA.

1.21 Two letters have been received requesting that the locks be kept open later into the winter to allow for needed commerce. Copies of these letters are shown in APPENDIX A.

1.22 Reference documents which provide supporting information for this Supplement include, in addition to the Final Environmental Statement "Operation and Maintenance for Federal Facilities at Sault Ste. Marie, Michigan" (July 1977), the following documents:

a. FEIS, NAVIGATION SEASON EXTENSION DEMONSTRATION PROGRAM, FY 1979, (August 1978). This document describes in detail the mitigating measures proposed for extending the season to 8 January plus or minus one week and their environmental effects. Conclusions reached were that activities implementing the Program were not anticipated to produce major adverse impacts.

b. FEIS, Great Lakes-St. Lawrence Seaway Navigation Season Extension, Interim I Feasibility Study, Sept 1977. The proposed activities, incorporating proposed mitigating activities are described in detail in this document. Extensive review of this document by the Winter Navigation Board has identified no overriding adverse effects which would justify stopping implementation. The probability, persistence and magnitude of impacts would be less than that which could occur under 31 January extension, since the present proposed extension involves less time than the 31 January extension.

c. Report of the Chief of Engineers submitted to the Secretary of the Army 16 November 1977, recommends extension of navigation on the upper four Great Lakes, incorporating the Lime Island airboat, Sugar Island bubbler flusher and other mitigating measures described in Interim I.

d. Survey Study for Great Lakes and St. Lawrence Seaway Navigation Season Extension - Draft, March 1979.

e. Staff Report on the Potential for Navigation through the St. Marys River Beyond 15 December 1979, May 1979.

f. Copies of these are available from the Detroit District office at the address shown on page i of the Summary.

II ALTERNATIVES INCLUDING PROPOSED ACTION

2.01 Alternatives Considered and Eliminated from Detailed Study under this environmental document. Environmental evaluations of the feasibility of extending the navigation season have been made under the (a) Interim Feasibility Study, Great Lakes-St. Lawrence Seaway Navigation Season Extension, September 1977; (FEIS) and (b) Draft Survey Study for Great Lakes and St. Lawrence Seaway Navigation Season Extension, March 1979 (DEIS). However, a quantified, comprehensive environmental evaluation for an operational extended season (year-round) on the Great Lakes cannot be made at this time. This is in part due to the lack of information concerning the existing biological conditions and the magnitude, extent, persistence and/or probability of impacts of winter navigation on the environment. Also, additional authorization and/or appropriations would be required to implement the above alternatives.

2.02 Therefore, the above alternatives have been eliminated from further consideration in this document at this time. However, they are viable alternatives under the Navigation Season Extension Survey Study and will be considered further with development of this program.

PROPOSED ACTION

2.03 The proposed plan addressed in this Supplement is to extend the operation season of the lock facilities at Sault Ste. Marie, Michigan, thereby extending the inter-Great Lakes shipping season. Two of the four locks of the United States lock Facilities, the Poe and Mac Arthur, would be utilized to accommodate winter vessel traffic. Most of the traffic would use the Poe Lock, while the Mac Arthur would serve as a backup unit during busy periods.

2.04 The locks have historically been kept open from approximately 1 April to 15 December; however, the Division Engineer has the authority to extend the closing date of the lock facilities at the reasonable request of the using (commercial) interests to the extent that weather and ice conditions permit (Title 33, Code of Federal Regulations 207.440 (u)). Since 1965, the facilities have been kept open beyond 15 December. In years following, the closing date of the locks gradually increased until, in 1974, the facilities were open year-round. This continued up through 1978 (Table II-1). Additional closing and opening dates are provided in Appendix B.

TABLE II-1
CLOSING DATES OF THE SOO LOCKS
1967 - 1977

Winter Season	Closing Date	Last Vessel Passage Date	Time
1967-68	31 Dec 67	31 Dec	03:42
1968-69	4 Jan 69	4 Jan	23:59
1969-70	11 Jan 70	11 Jan	11:42
1970-71	29 Jan 71	29 Jan	16:57
1971-72	1 Feb 72	1 Feb	8:52
1972-73	8 Feb 73	8 Feb	9:45
1973-74	7 Feb 74	7 Feb	00:10
1974-75	No Closing	31 Mar	11:22
1975-76	"	31 Mar	23:47
1976-77	"	31 Mar	11:46
1977-78	"	31 Mar	18:56
1978-79	"	31 Mar	8:45

2.05 In order to provide for extended navigation during ice conditions through the Federal lock facilities, environmental impacts and impacts on the local communities have been observed, since under the proposed plan the locks are to remain open until these impacts become substantive. The selected plan incorporates mitigative measures that are required to provide for acceptable navigable measures. These measures were discussed in the Project description.

SELECTED PLAN

2.06 The Selected Plan proposes to extend lock operations to approximately 8 January (± one week due to the variability of climatic conditions). The extended season would result in the need for implementation of the following mitigative measures dependent upon ice and weather conditions:

1) installation of the Little Rapids Cut iceboom to retain ice outside of the Cut;

2) placement of rock filled barge (scow) and craneweights to prevent rotation and movement of the ice field;

3) provision of an alternative mode of transportation for the residents of Lime Island for over-ice transportation assistance (e.g. airboat or helicopter);

4) utilization of a bubbler-flusher at the Sugar Island Ferry dock to provide for ease of docking by the ferry.

Mitigative measures 1 and 2 above would be implemented by the Corps of Engineers (COE). Mitigative measures 3 and 4 above would have to be implemented by some other entity under the selected plan if extended operations are to proceed. Funds are available for the provision of the lock operations and Corps' mitigative measures.

The B/C ratio for the selected plan is 12.1 (see Table II-2). While other, shorter term alternatives have higher B/C ratios, they do not provide as high net national benefits.

2.07 A service (icebreaking support) provided by the U.S. Coast Guard is available to complement the above measures. Operation of icebreakers is the decision of the Coast Guard and not an operational component of the lock facilities. Such operations are conducted in many parts of the Lake System when the locks have been closed to traffic. However, icebreaking assistance could increase due to increased vessel traffic as the result of extended lock operations.

ALTERNATIVES

2.08 Alternative 1 - No Action. The operating procedure calls for opening the locks on about 1 April and closing about the 15th of December, depending on ice and weather conditions. No additional mitigative measures would be required other than those already in operation. Up to this date, only icebreaking assistance is required and this is minimal or non-existent. Under this alternative, no additional navigational economic benefits would be realized.

2.09 Alternative 2 - Extension to Approximately 25 December. Under this Alternative, commercial navigation would terminate shortly after the existing vessel used for cross channel transportation (Lime Island) is no longer able to traverse the river because of increasing ice thickness in the channel. No mitigation measures would be applied under this Alternative. A benefit to cost ratio of 40.2 to 1 would result (Table II-2).

2.10 Alternative 3 - Extension to Approximately 30 December. Under normal winter conditions, providing for navigation to approximately 30 December is feasible if an alternative mode of transportation is provided for residents of Lime Island. Historically, 30 December is the approximate time when ice congestion becomes severe enough to prevent movement of the Sugar Island Ferry. Up to this date in an average winter, the Sugar Island Ferry has been able to operate without being severely impacted.

2.11 The alternative would require the following estimated funding to operate: an additional $39,420 per week beyond 15 December for lock operation. The total estimated benefits derived from alternative 3 would be about $3,257,900. The B/C ratio would be 19.6 to 1. (Table II-2).

TABLE II-2[4/]
ECONOMIC CONSIDERATION OF THE SELECTED PLAN
AND ALTERNATIVES

	Mitigative Measures	B/C Ratio (cumulative)	Average Annual Cost[1]	Average Annual Benefit[2]
Selected Plan	Airboat[3] Rock-Filled Scow and Craneweights[3] Bubbler-Flusher[3] Iceboom	12.1	$361,330	$4,402,000
Alternative 1	- None -	--	--	
Alternative 2 (25 Dec)	- None -	40.2	$50,683*	$2,037,700
Alternative 3 (30 Dec)	Airboat[3]	19.6	$166,210	$3,257,900

*Lock operations only

[1]Includes lock operations

[2]Benefits consist of $0.23 per ton winter rate savings on iron ore moving from Lake Superior ports to lower lakes ports, $0.14 per ton savings on coal from lower lakes ports to Lake Superior and $0.88 per ton stockpiling savings at lower lakes iron and steel mill plants. No stockpiling savings were claimed for coal or stockpiling at the pellet plants. Transportation rates for iron ore and coal obtained from Skillings Mining Review, March 24, 1979. Winter rate savings is approx. 5 percent of rates obtained out of Skillings. Winter rate percent obtained from Winter-Rate Study for GL/SLS System.

[3]Estimated cost of non-COE mitigative measures have been included in computing benefit/cost ratios.

[4]The costs cited do not include unquantifiable environmental and/or social impacts. While such impacts may occur and represent a cost, that cost cannot now be determined. The goal of the factors to be considered in a closure decision is to keep such costs at a minimum by reducing physical impacts.

III. THE AFFECTED ENVIRONMENT

Introduction

3.01 Extending operation of the Federal Facilities at Sault Ste. Marie, Michigan through 8 January (± 1 week) is important to the commercial navigation users of the entire Great Lakes Region. Accompanying such activities are perceived/potential impacts to the natural and human environment on the entire Great Lakes Basin.

3.02 In order to provide a framework by which to assess those effects directly related to extended operation of the Federal Facilities and those secondary effects related to an extended navigation season, a summary discussion of the present environmental setting on a system-wide (Great Lakes Basin) and site specific basis (St. Marys River) is provided below. A more detailed description may be found in Appendix C of the Survey Study for the Great Lakes and St. Lawrence Seaway Navigation Season Extension Draft Report, March 79.

General Description of the Great Lakes System

3.03 Roughly oblong in a northwest-southeast direction, the basin extends from 40° 30' to 50° 50' north latitude and between 75° to 93° 10' west longitude. The dimensions of the basin are approximately 700 miles in the north-south direction and 900 miles in the east-west direction.

3.04 The Great Lakes within the basin, Superior, Michigan, Huron, Erie and Ontario, with their connecting rivers and Lake St. Clair, have a water surface area of about 95,000 square miles of which approximately 60,800 square miles are within United States boundaries. The total area of the Great Lakes basin, both land and water, above the easterly end of Lake Ontario is approximately 296,000 square miles, with 174,000 square miles of it in the United States, and 122,000 square miles in Canada.

3.05 The outlet rivers within the system, St. Marys, St. Clair, Detroit, and St. Lawrence Rivers, have a combined shoreline length, U.S. and Canada, of 583 miles, of which 280 miles are within United States boundaries.

Hydrology - Great Lakes Basin

3.06 The levels of the Great Lakes are a result of an integration of all of the hydrologic factors which affect the land and lake surfaces of the basin as well as the hydraulic characteristics of the connecting channels and the St. Lawrence River. Lake level is the

characteristic of the lakes which most frequently affects man's use of these waters, since it impacts on shoreline use, navigation, and the amount of hydroelectric power which can be produced in the connecting channels and outlet rivers.

3.07 The levels of the Great Lakes are not constant. Short-term water level variations are caused by persistent winds and pressure changes, whereas long-term water level variations are caused by changes in lake water volume. Many studies have been made to determine whether the long-term water level variations from high to low and vice versa follow a regular cycle. Other than the usually regular seasonal rise and fall, no evidence for regular long-term cycles has been found.

3.08 Ice jams, during the winter, have historically presented problems concerning short-term variations in water levels. Ice jams are formed in connecting channels, rivers, and bays.

3.09 As the ice cover forms on the St. Marys River, in areas with velocities less than 2.25 feet per second, it consolidates, converting the open channel into a closed channel, resembling a pipe, with resultant increases in head loss. However, if the velocities are greater than 2.25 feet per second, as they are in many parts of the connecting channels of the Great Lakes, a stable ice cover generally cannot be maintained. As a result, ice floes which flow through the high velocity areas tend to turn on end or submerge under the head of any downstream stable ice cover. When this happens, an ice jam or hanging dam can form. Frazil ice can add to the size of an ice of hanging dam. Such dams result in a constriction in the channel, which may seriously reduce the outflow. These effects can occur in the outlets of both regulated and non-regulated lakes. However, for regulated lakes, a technique can be used to minimize the chance of ice jamming and the formation of a hanging dam by reducing the flow at the onset of ice formation so that the velocities are lowered in the critical sections of the river, thus allowing a consolidated smooth ice cover to form. A control or regulating structure must be available in the river to utilize this technique.

3.10 Ice booms may also be installed across critical sections of a river to reduce flowing ice and subsequent ice jams and, when appropriate, aid in the formation of stable ice cover.

General Description of the St. Marys River System

3.11 The St. Marys River, a Great Lakes connecting channel, is approximately 63 miles long and flows in a southeasterly direction between the State of Michigan and the Province of Ontario, Canada, from the eastern end of Lake Superior into the northern end of Lake Huron (see Figure III-4). Located on the U.S. side of the river at Sault Ste. Marie, Michigan, about 14 miles downstream from Lake

Superior are the Federal lock facilities consisting of two U.S. Government hydroelectric power plants, the Compensating Works, information center, administration building, dockage facilities, park, and associated public facilities. The Locks are located adjacent to the St. Marys Rapids, where most of the approximately 22-foot drop in water elevation occurs.

3.12. The Sault Ste. Marie Lock System includes, on the United States side, four parallel locks located abreast of one another, which are operated by the Detroit District Corps of Engineers. Dimensions of the locks are as follows:

Lock	Length (feet)	Width (feet)	Depth (feet)
Davis	1,350	80	23.1
Sabin	1,350	80	23.1
MacArthur	800	80	31
Poe	1,200	110	32

3.13 The information center, administration building, dockage facilities, park, and associated public facilities are in close proximity to the Locks. The information center is located in the Canal Park, and the administration building is on the northwest side of the pier separating the Poe and MacArthur Locks.

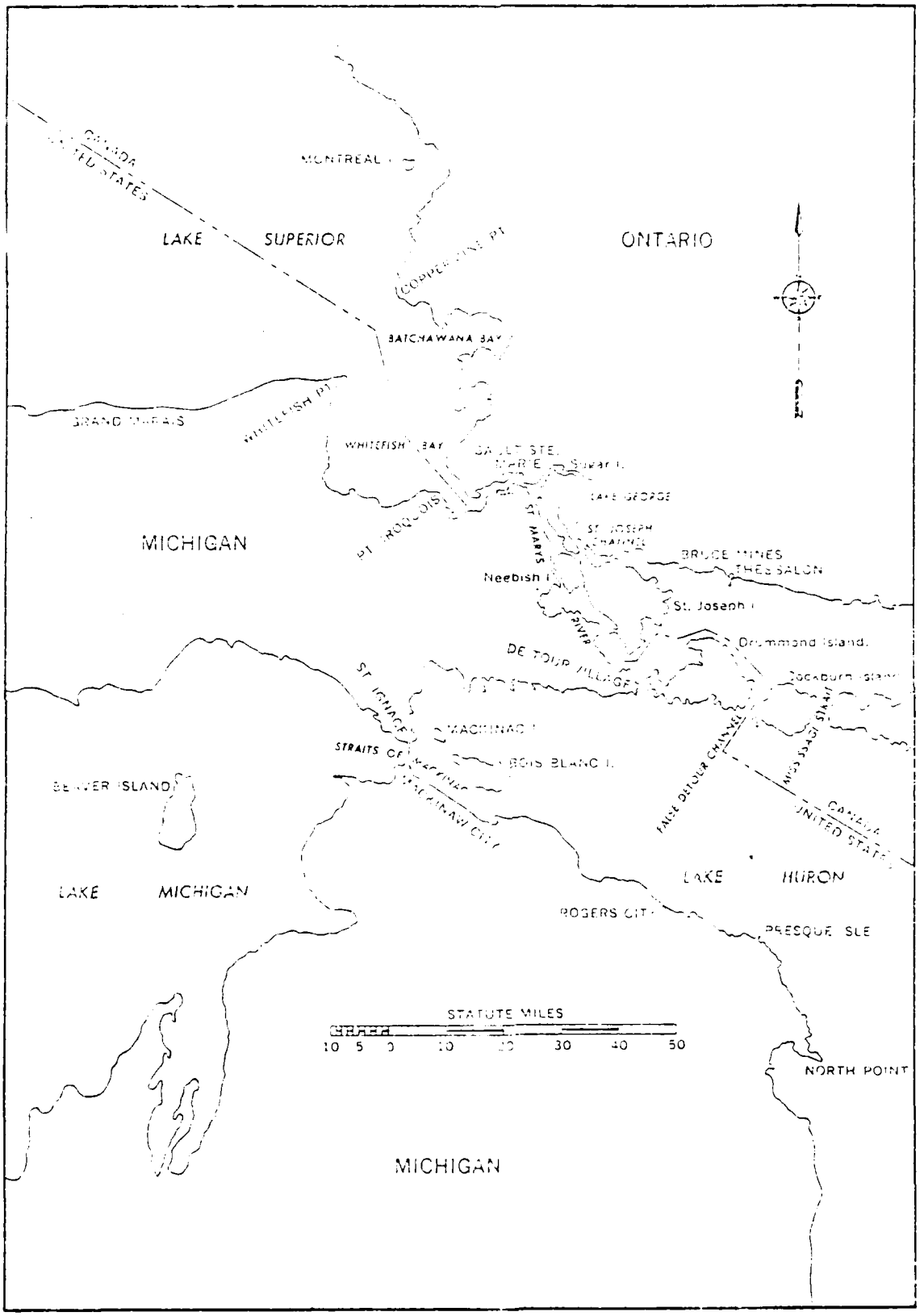
3.14 Figure III-2 shows locations of those hydroelectric power plants, locks, and the Compensating Works.

3.15 A discussion of the environmental features of the St. Marys River area are included in "The Final Environmental Impact Statement for the Operation and Maintenance of the Federal Facilities at Sault Ste. Marie, Michigan" (Detroit District U.S. Army Corps of Engineers, 1977).

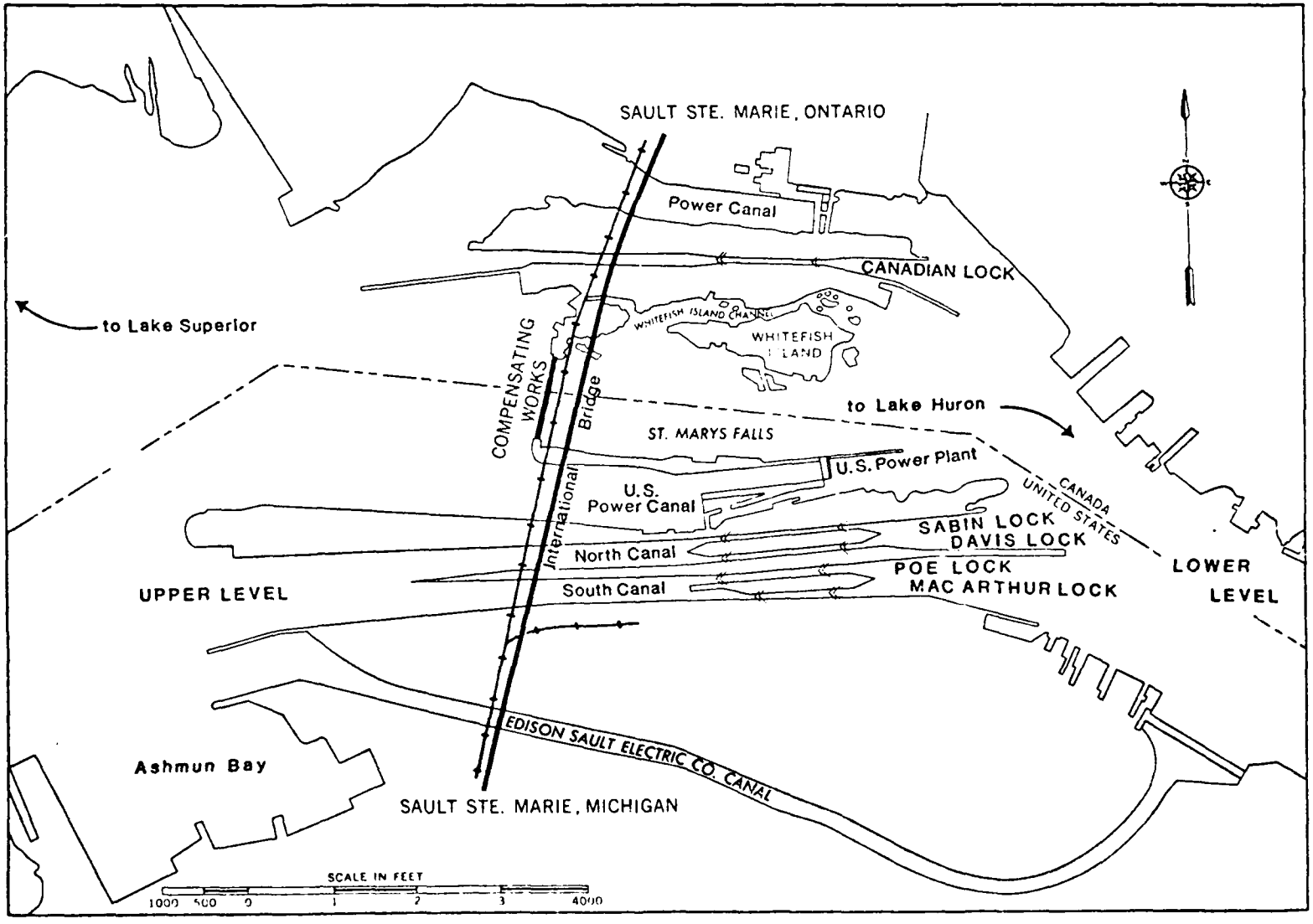
Hydrology - St. Marys River

3.16 From Lake Superior to Lake Huron the surface level drops 22 feet. Only a 1/4 foot drop is encountered from Whitefish Bay to the head of the St. Marys Rapids, a distance of 14 miles. Most of the fall, about 20 feet, occurs between the head of the U.S. Navigation Canal and the foot of the Rapids, a distance of about 1-1/2 miles. Below the Rapids, the river falls about 2 feet as it divides into two channels around Sugar Island and flows about 45 miles into Lake Huron.

3.17 There are two Government owned hydroelectric power plants located on the United States side of the St. Marys River. the old plant is adjacent to and approximately halfway down the rapids, immediately north of the upper end of the Sabin Lock, and has a total



MAP OF ST. MARYS RIVER REGION



Map of the St. Mary's River Region

capacity of 2,300 KW. The new plant is located at the foot of the rapids, approximately 1/4 mile north of the Sabin Lock and has a total capacity of 16,000 KW. All water used for both plants is taken from the same diversion canal and has a flow of approximately 12,700 cubic feet per second (cfs) at plant capacity.

3.18 The other hydroelectric power plant on the United States side is the Edison Sault Electric Company Plant, located below the rapids. This plant has a total capacity of 41,300 KW with a head of 20 feet and a water usage of approximately 30,500 cfs at rated plant capacity. It is served by a 2-1/2 mile long diversion canal.

3.19 There are two plants on the Canadian side of the St. Marys River; one hydroelectric plant is owned by the Great Lakes Power Corporation and the other, a hydraulic plant driving a groundwood mill, is owned by the Abitibi Pulp and Paper Company. Water requirements for these two plants prior to the 1970 installation of an 8,000 horsepower electric motor at the Abitibi Plant was 25,000 cfs. Installation of the electric motor resulted in a decrease of about 7,000 cfs in water requirement for power production. However, the plant is still used to discharge water from Lake Superior as required.

The Great Lakes Power Corporation plant has 28 units and a total installed capacity of 21,500 KW. (International Great Lakes Levels Board, 1973).

3.20 The Compensating Works is a dam-like structure located at the head of the St. Marys Rapids containing 16 gates which have the capability of being adjusted to control regulated outflows from Lake Superior. Eight of the gates are operated by the Corps of Engineers and the other eight are operated by the Canadian Great Lakes Power Corporation Limited under the direction of the International Lake Superior Board of Control. Flow through the Rapids can range from approximately 3,000 cfs with 1/2 gate open to about 127,000 cfs with all 16 gates open.

3.21 The rock ledge, located 1500 feet downstream of the Compensating Works, is the natural control of the St. Marys flow. The total outflow is discharged by U.S. and Canadian hydroelectric power plants, navigation locks, and the Compensating Works across the head of the rapids. During normal operation, when power and navigation flow requirements are met, the gates of the compensating works are set to regulate the remaining Lake Superior outflow through the rapids. The Compensating Works consist of 16 vertical lift gates, each 52 feet wide. Gates 1 through 8 are owned, operated, and maintained by the Great Lakes Power Corporation, a Canadian firm. Gates 9 through 16 are owned by the U.S. Army Corps of Engineers and are maintained and operated by the Edison Sault Electric Company, a U.S. firm. The gates are operated in accordance with the directions

of the International Joint Commission under the authority of an international treaty.

3.22 Since 1900, the discharge of the St. Marys River has averaged about 75,000 cubic feet per second (cfs), ranging from a maximum of 127,000 cfs in August 1943 to a minimum of 41,000 cfs in September 1955. However, it should be noted that under the present regulation plan the minimum flow is controlled at 55,000 cfs. Since 1921, when complete control of the river was achieved, flow through the Rapids area has averaged 17,000 cfs, with a maximum of 127,000 cfs in August (16 gates open) and a minimum of 500 cfs. This minimum flow of 500 cfs was the estimated leakage that occurred when all gates were closed during several months in the 1941-42 period. Since 1955, at least 1/2-gate has been kept open during months of low flow to prevent the Rapids area from drying up and becoming an unusable habitat. The flow through the Rapids with 1/2-gate open varies from 1,500 cfs to 3,000 cfs, depending on the particular gate used and the existing water level of Lake Superior.

Ice Conditions - St. Marys River

3.23 Ice conditions in the St. Marys River may be divided into three different stages.

(1) Fall Freeze-Up Stage. This period generally extends from mid-December to mid-January and prevails up to the time the main part of the river is covered with a solid ice sheet. Where velocities are high, anchor and frazil ice can form. These forms of ice, when they occur, are a main cause of clogging hydroelectric penstocks. This is impossible to control, but has no impact on the Rapids. The Soo Harbor with its large cross-section and low flow velocity allows complete and stable ice cover to form. If this stability is destroyed, ice from the harbor drifts into Little Rapids Cut. Accumulation of this ice starts at Frechette Point where stable ice cover of Lake Nicolet prevents further ice passage downstream. Accumulation eventually fills the navigation channel to above Sugar Island ferry crossing above Mission Point. This ice then becomes a hinderance to vessels without icebreaking capabilities and could cause a reduced flow resulting in a loss in power production and possible flooding.

In order to prevent flooding below the Rapids, which can result from these ice jams in the lower river, the maximum winter flow in the river has been set, by the current regulation plan, at 85,000 cfs. The gates of the Compensating Works are usually pre-set prior to ice formation with generally less than 5 gates open during the winter prior. Shore ice is generally found in the shallow

areas around Whitefish Island, covering Whitefish Channel and extending several hundred feet downstream, and over toward the downstream pier of the Canadian lock. The rest of the Rapids area remains open. At Frechette and Six Mile Points, the velocity of the water slows, allowing an ice cover to form. Ice cover formed during this fall stage is characteristically unsafe. However, during the winter of 1976-77 and 1978-79 a 1-foot 90 percent and 100 percent respectively, blue ice cover, respectively, formed by mid-January at Frechette point. During the winter of 1976-77, approximately .4 foot, 100 percent snow ice cover was formed at Six Mile Point around 27 December. During this same winter, a .5 foot, 100 percent ice cover of blue ice formed in the upper Lake Nicolet by mid-December. Warmer water, discharged from the Algoma Steel Plant upstream of the Canadian power plant, generally prevents ice from forming for several miles below the power plant along the Canadian shoreline.

(2) Solid Ice Stage. The period from mid to late January to mid-March is the deep winter period and ice conditions generally remain stable over much of the upper and lower river. The main rapids generally remain open over a distance of about 4,000 feet below the Compensating Works. In addition, a band of water along the Canadian shoreline, resulting from the warm water point discharge upstream, rarely freezes over completely.

(3) Spring Breakup Stage, mid-March to mid-April. Generally, the Spring Breakup Stage begins around the third week in March, and by the first week in April, most of the ice is gone. During this time, large quantities of ice pass through the Compensating Works and the Rapids as a result of warm temperatures and westerly winds on Lake Superior. This condition can last for a few days or even weeks. Shore ice remains around Whitefish Island and in the backwater eddy area downstream of the island in a pattern similar to that observed during fall freeze-up. This ice remains stable throughout the spring breakup and is generally the last ice to leave the area.

3.24 An analysis of actual ice conditions in the St. Marys River System was undertaken from the winter of 1968-69 through the winter of 1978-79 (11 winter seasons). The record of these ice conditions observations consists of:

a. Aerial photographs of the entire St. Marys River System.
b. Time-lapse movie films of ice conditions in the Soo Harbor-Little Rapids Cut area, Drummond Island Ferry crossing.
c. Water level hydrographs of the Soo Harbor-Little Rapids Cut area.

d. Ice thickness measurements in the Soo Harbor-Little Rapids Cut-Lake Nicolet areas.
e. Ice condition summaries of the entire system, supplied by the Soo Area Office.
f. Specific investigational files (such as the feasibility study for Little Rapids Cut ice boom).
g. Satellite imagery (LANDSAT and NOAA-GOESS).
h. Other items of information supplied by Federal and Non-Federal agencies, as well as key individuals.

From these observations, ice conditions were analyzed for three different conditions, most severe, average, least severe. The winter of 1976-77 was chosen as the most representative of a very severe winter. This winter has been considered a benchmark winter for the entire Great Lakes; being rated as the fifth coldest in the last 200 years (Summary of Great Lakes Weather and Ice Conditions, Winter 1976-77, NOAA Technical Memorandum ERL GLERL-20, as in COE April 1979). Ice was formed during this winter in the St. Marys River, in early December, and was maintained through the last week in April. Shipping was severely hampered by the abnormally large amount and duration of ice cover.

3.25 The winter of 1972-73 was chosen as the most representative of a mild winter; being rated by NOAA's Great Lakes Environmental Research Laboratory as the second least severe winter in the St. Marys region in the last fifteen years. Ice of substantial amount did not form in Soo Harbor until the last week of January 1973, approximately 1 to 2 weeks later than under average conditions. The conditions from the other 9 winters were averaged to obtain the "typical winter" data.

Water Quality - St. Marys River

3.26 Discharge of industrial waste from Algoma Steel Corporation, Ltd. has resulted in sediment concentrations exceeding U.S. EPA and/or Ontario dredge disposal guidelines for phenolic substances, oil, cyanide, iron, and zinc for some distance downstream of the plant. Elevated levels of iron and zinc were found in U.S. sediments downstream of Sault Ste. Marie, Ontario.

3.27 Concentrations of phenolic substances in water exceed 1978 Agreement objectives and Ontario criterion for more than 11 km below Algoma outfall. Transboundary movement of these substances is evident in Lake George, where phenol levels exceeding Agreement objectives were found in U.S. waters.

3.28 Cyanide levels averaging 0.28 mg/l downstream of Algoma outfall exceed Ontario permissable limits of 0.2 mg/l for a public water supply. Both of these values are higher than the concentrations reported to be lethal to various species of fish. Major reduction should be achieved with the final commissioning of a new byproduct recovery plant. (International Joint Commission, 1979).

3.29 With the exception of one stretch of the river (approximately 10 miles), high water quality in the St. Marys River is maintained, as the cold water feeding into the river from Lake Superior is of high quality and well-oxygenated. Serious pollution has not greatly affected the water quality of the American side of the river. In general, water quality is good, and the St. Marys River supports a wide variety of aquatic organisms. (FWS Report, June 1979).

3.30 During the 1973 and 1974 surveys, mats of oils and wood chip fibers were present downstream from the locks, as far as Lake George, in the North Channel with a lateral distance ranging from 90 to 180 meters (300 to 600 feet) from the Canadian shore.

3.31 Benthic Communities. The bottom fauna varies according to the natural characteristics of a body of water, such as depth, temperature, and type of sediment. A biological survey undertaken in 1967 by the Ontario Water Resources Commission in cooperation with the International Joint Commission (IJC) indicated that benthic populations on the Canadian side of the St. Marys River downstream from the Locks can be classed as a recovery zone. A well-balanced fauna with a wide variety of organisms was found in this area. There was also a common occurrence of clean-water organisms. Sludgeworm and midge larvae populations were represented by a wide variety of species, including several types which are restricted to clean-water habitats. No wood particles, or fiber, or oil were observed in the sediment, nor was there a napthalene odor. An iron determination on the U.S. side showed 0.16% Fe_2O_3 in the sediment. Industrial wastes from the Canadian side do not appear to impair the benthos along the western channel.

3.32 Field data collected in the St. Marys River along the mainland side between Three and Five Mile Roads indicate an abundance of benthic organisms. The average density of benthic organisms was 9,593 organisms per square meter. The composition mean for all stations sampled indicate snails (Gastropoda) comprised 45%; flies (Diptera) 17%; segmented worms and leeches (Annelida) 17%; freshwater clams 12%; and others comprising less than 2% each (Suds, sideswimmers, Amphipoda; water mites, Hydracarina; caddisflies, Trichoptera; mayflies, Ephemeroptera; roundworms, Nemota; aquatic sow bugs, Isopoda; and alderflies, dobsonflies, fishflies, Megaloptera (Gleason, et al 1979).

3.33 A benthic macroinvertebrate study conducted during January-April 1979 at Frechette Point and Six Mile Point identified 56 taxa (Table III-1). The taxonomic composition of the macrobenthic fauna found was very similar to that found in studies conducted in the St. Marys River in 1974-75 (Hiltunen 1978) and 1979 (Gleason, et al 1979) and also in the lower St. Clair River (Hiltunen 1978).

3.34 The total density of benthic macroinvertebrates was 14,125.8/m^2 (Table III-2). Total density was variable and ranged from 1,894/m^2 in March to 25,174/m^2 in February.

Table III-1 Benthic macroinvertebrates collected by Ponar grab from the St. Marys River at Frechette Point and Six Mile Point, January-April 1979. [F - found only at Frechette Point; S = found only at Six Mile Point.]

- Cnidaria
  - *Hydra*
- Tricladida
- Rhadocoela
- Nematoda
- Nemertinea (S)
- Hirudinea
- Oligochaeta
- Polychaeta
  - *Manayunkia speciosa*
- Copepoda
- Decapoda
  - *Orconectes* (F)
- Ostracoda
- Amphipoda
  - *Gammarus*
  - *Hyalella azteca*
- Isopoda
  - *Asellus*
  - *Lirceus*
- Diptera
  - Tipulidae (S)
  - Ceratopogonidae
  - Chironomidae
  - Empididae
  - Simulidae
- Emphemeroptera
  - *Ephemerella*
- Coleoptera
  - *Haliplus* (S)
  - Dytiscidae (S)
- Lepidoptera
- Neuroptera
  - *Sialis* (F)
- Trichoptera
  - *Mystacides*
  - *Triaenodes*
  - *Cheumatopsyche*
  - *Hydopsyche* (F)
  - *Neureclipsis* (F)
  - *Polycentropus*
  - *Agrypnia*
  - *Ceraclea* (F)
  - *Hydroptila*
  - *Setodes* (F)
  - *Molanna*
  - *Oecetis*
  - *Phylocentropus*
  - *Psycomyia* (F)
- Hemiptera
  - Corixidae (S)
- Acarina
  - *Arrenurus*
- Gastropoda
  - *Amnicola*
  - *Campeloma*
  - *Gyraulus*
  - *Helisoma*
  - *Lynmaea*
  - *Physa*
  - *Valvata sincera*
  - *V. tricarinata*
  - *Goniobasis livescens*

Baetisca (F)
Caenis
Ephemera
Hexagenia

Pelecypoda
Pisidium
Sphaerium

Table III-2 Density (average number/m^2) and relative abundance (as percent of total) of the major groups of benthic macroinvertebrates collected by Ponar grab from the St. Marys River, January-April 1979. [All stations and months combined.]

	Average number/m^2	Percent of total
Chironomidae	3,512.7	24.9
Oligochaeta	3,177.5	22.5
Gastropoda	2,786.0	19.7
Pelecypoda	1,485.5	10.5
Polychaeta	973.1	6.9
Amphipoda	478.8	3.4
Ephemeroptera	158.1	1.1
Trichoptera	129.1	0.9
All others	1,425.0	10.1
Total density for all taxa combined	14,125.8	

3.35 The U.S. Environmental Protection Agency (EPA) sediment samples taken immediately upstream of the locks in June 1970 gave no indication of mercury when analyzed by procedures with a detectable limits of 0.2 mg/kg. Mercury buildup ranging from 0.6 to 1. mg/kg has been found in fish taken from locations immediately downstream of the locks and off Nine Mile Point. Although this content places these fish within the range considered unsafe for continuous human consumption according to the criteria established by the U.S. Food and Drug Administration, the source of this mercury assimilation has not been discovered. The 1970 EPA sediment data indicated the channel sediments were acceptable for open water disposal, except for a portion of the river below the locks. In 1972, the channel was resampled and sediment from the entire river was classified as suitable for open water disposal. The channel was resampled in 1978. Results of this study showned no new significant data. Station locations, sediment data and additional information on the 1972 U.S. EPA sampling of the Federal navigation channel are shown in Appendix B of the FES and are not repeated in this supplement.

Fisheries

3.36 The St. Marys River meanders southward to discharge its cold waters into the northern portion of Lake Huron. The bays and lakes that occur in the expanded portions of its course have extensive wetland areas. The costrictions, expansions and meanders cause variations in current patterns and add diversity to the bottom substrate and aquatic medium. This diversity in habitat supports many species of fish.

3.37 The St. Marys River system contains cold and warm water fish species. The diversity of river and shallow lake habitat types within the system and the presence of Lake Superior and Huron at either end insure the propagation of both fish communities. Although a comprehensive list of over 42 species has been developed, and data on life histories, water quality, and floral and benthic communities are available, adequate baseline information on the biological interactions that support this fishery is lacking.

3.38 The St. Marys Rapids is a unique area that is known for its excellent fishery. As early as 1830, visitors congregated to watch Indians in bark canoes netting and spearing lake whitefish (Coregonus clupeaformis). In 1883, Ontario introduced rainbow trout (Salmo gairdneri) into Lake Superior. Sustained by frequent stocking by Michigan and Ontario, together with natural reproduction in the Rapids area, this species has become an important component of the Rapids fishery (Feasibility Study of Remedial Works in the St. Marys Rapids at Sault Ste. Marie, September, 1974, p. 2-18). Walleye (Stizostedion vitreum) has been another important species in the Rapids area from early settlement times.

3.39 Over the years, the historic whitefish and walleye fishery in the Rapids has declined. Although the same is true for the introduced rainbow trout fishery, it still provides quality fishing. The Rapids cascade from their crest to the approximate level of Lake Huron in about one half (1/2) of a mile. The fall over this distance is more than 20 feet. The width of the unrestricted Rapids is approximately one quarter (1/4) of a mile. The substrate is composed mostly of boulders, rock, gravel, sand and exposed bedrock. This provides a highly productive substrate for the development of a variety of benthic organisms and shelter for forage fish. In addition to this supply of forage, spawning habitat is provided for rainbow trout and other species. The combination of physical features and high biological value categorizes the celebrated St. Marys Rapids, an area unique to the drainage system of the Great Lakes.

3.40 In considering the entire St. Marys River system, yellow perch and white sucker are the most common sport fish found in the river. Northern pike, walleye, rock bass, bullheads and rainbow smelt are also important sport species. Areas in which these species are most likely to be taken are the lake and bay areas. Seasonal migrations of cold water species such as the lake whitefish, lake herring, rainbow smelt, lake trout and rainbow trout occur for spawning or temperature regulation into and out of the river. Very little information is available on spawning and nursery areas in the river system. However, the wetlands, rocky shoals, and clean, coarse gravel areas in running water have been observed to be used for spawning by most of the above mentioned species. Former suspected or known spawning areas include the Iroquois Island Shoals for lake trout and lake herring; the St. Marys Rapids area for rainbow trout, lake whitefish, lake sturgeon, and walleye; Lake Munuscong at Birch Point, Roach Point, Barbeau Point, Munuscong Island, between Barbeau and Maple Point and the Munuscong River for walleye and possibly smallmouth bass; and areas of rooted aquatic vegetation, river and lake bottom substrate and debris scattered throughout the river system for northern pike, yellow perch and many other species. No comprehensive survey of spawning and nursery areas, species composition, population dynamics and movement patterns have been conducted in the river. Some species such as the longnose gar and the lake sturgeon have virtually disappeared or are very rare. Others such as the lake whitefish and lake herring have drastically declined in number.

3.41 Because there is so little known about the St. Marys River fishery, the Michigan Department of Natural Resources (MDNR) conducted a sampling program in August, 1975. Some information on the distribution of fishes in the river system was achieved for this time of the year. Sampling techniques restricted the collection to larger species. The river above the St. Marys Rapids was dominated by yellow perch, followed by white sucker, lake whitefish and

northern pike. Five other species including brown trout and coho salmon were also collected. In Lake Nicolet, white suckers were most common followed by yellow perch, northern pike, brown bullhead, lake herring and walleye. Four other species were also collected including lake whitefish and brook trout. In the Raber Bay area the dominant species by far was the lake herring. This species was followed in abundance by the rainbow smelt, white sucker, yellow perch and norther pike. Walleye, splake, lake whitefish and five other species were also collected. The species most common in the Munuscong Bay area was the rock bass, followed by the redhorse, yellow perch, northern pike and brown bullhead.

3.42 Sport Fishery - Recreation. The winter months are also productive for ice fishing in the St. Marys River area. The Bureau of Outdoor Recreation (presently Heritage Conservation and Recreation Service) conducted a study of winter recreational activity on the river in 1974-75. In its report, "Navigation and Winter Recreation," ice fishing activities were described from above Sault Ste. Marie down to DeTour, which includes virtually the entire length of the river. The Michigan Department of Natural Resources has also conducted year-round surveys of fishing activity in the area. Beginning at the upper river, the area between Mosquito Bay to Leigh Bay is a good ice fishing area for whitefish. It is usually best in the early winter, however, fishing does extend into March. This same area is also noted for continuous catches of yellow perch, northern pike, and lake herring throughout the winter. There is little ice fishing done in the rapids or the Soo Harbor area primarily due to inaccessibility and danger from fast-moving flow ice. Two areas in Lake Nicolet produce good ice fishing success. These are Shingle Bay and the area surrounding Nine Mile Point. Yellow Perch and northern pike are the most common species taken from these two areas. In the West Neebish Channel below the rock cut, ice fishermen take lake herring early in the winter and walleye, northern pike, and burbot throughout the winter months. Lake Munuscong historically has consistently been a good producer of walleye throughout most of the winter season. Other species taken from this lake include northern pike and yellow perch. The area near Lime Island has been an excellent ice fishing area for lake herring. This has tapered off in the last several years for unknown reasons. The area below Lime Island and above DeTour is a good producer of northern pike and yellow perch for ice fishing enthusiasts.

Wildlife

3.43 The St. Marys River drainage basin is composed of a wide diversity of habitat types which support a wide spectrum of the wildlife species known to inhabit the Great Lakes Region.

3.44 The habitat types found in this drainage include hardwood and coniferous forests, pastures, croplands, inland marshes and abundant permanent and temporary wetlands contiguous to the St. Marys River.

3.45 Over 60 species of mammals may be found in the basin, some of which are very important to man as game animals. These include whitetail deer, black bear, snowshow hare, bobcat, gray squirrel, raccoon, red fox, coyote, skunk, beaver, river otter, weasel, mink and muskrat. Of the numerous bird species that can be found in the St. Marys River basin woodcock, ruffed grouse and numerous species of ducks and geese are harvestable resources. Over 25 species of reptiles and 20 species of amphibians occur in the area. In addition to their value as a harvestable resource, wildlife of the basin provide important recreational opportunities.

3.46 The shoreline, islands, wetlands and shallow waters provide feeding, resting and nesting habitat for many waterfowl, shore and wading birds, colonial nesters, and songbirds. Waterfowl commonly seen in the basin include whistling swan, Canada goose, snow and blue geese, mallard, pintail, black duck, gadwall, American wigeon, northern shoveler, blue-winged and green-winged teals, wood duck, redhead, canvasback, ring-necked duck, lesser and greater scaup, common goldeneye, bufflehead oldsquaw, ruddy duck, and common, red-breasted and hooded mergansers. Common loons migrate and summer along the river. Herring gull, ring-billed gull, common tern, Caspian tern, black tern, black-crowned night heron, snowy egret, and great blue heron all are found along the river.

3.47 Important migration areas along the river have been listed for birds of prey, shore birds and migrating passerines. Many waterfowl including scaup, common goldeneye, bufflehead and common and red-breasted merganser winter in open water areas of the harbor and around the power plants.

3.48 A study conducted during the winter of 1978-79 showed the following critical areas occupied by winter waterfowl: St. Marys Rapids, Edison Sault Hydroelectric Plant outfall area, and open water stretches along the Canadian shores at Sault Ste. Maire, Ontario, (especially near Bellevue Park). Approximately 1,000 ducks were present in these areas in January, with mallards, common goldeneyes, and common mergansers being the most abundant species (Robinson 1979). Canadian Geese were also observed in the St. Marys River System, especially along the Canadian side of the river near Sault Ste. Marie.

3.49 Mammal Utilization of the St. Marys River Ice Shelf. The frozen river permits mammals such as deer, gray wolf, coyote, fox, bear, bobcat and martin to range back and forth between Canada and Michigan's upper peninsula or between the islands and the mainlands. The movement of these mammals may be in search of food when local supplies become diminished during the deep snow months.

3.50 The Fish and Wildlife Service (FWS) field investigations conducted during 7 January and 25 March 1979 identified various mammal tracks on the ice shelf of the Middle Neebish Channel. Mammal tracks identified were the short-tail weasel, Mustela erminea; white-tailed deer, Odocoileus virginianus; snowshow hare, Lepus americanus; coyote, Canis Latrans; red fox, Vulpes fulva.

3.51 Threatened/Endangered Species. Federally endangered species which may visit or pass through the St. Marys River area include the American and Arctic peregrine falcons and the gray wolf. The bald eagle has Federally threatened status in Michigan. Bald eagles have been observed around the harbor areas and along the river during winter.

Development Aspects - St. Marys River Area

3.52 There are several factors that influence the cultural features associated with the Sault Ste. Marie, Michigan, area.

3.53 In 1953, a record of approximately 125 million tons of freight moved through the locks. This record still stands. During the last 10 years of shipping through the Sault Ste. Marie lock system, both the U.S. and Canadian locks, an average of 81,367,000 tons of commodities were shipped. In the period from April 1, 1974 to March 31, 1975, 101,845,000 tons of freight were moved through the lock system. The importance of the locks and the St. Marys waterway to the nation's economy is clearly demonstrated by the fact that two-thirds of the iron ore produced in the U.S. and Canada is shipped via this facility.

3.54 Over the last three decades, commodity movement through the locks at Sault Ste. Marie, Michigan, has been dominated by iron ore, coal, and grain. The following table shows historical commodity movement through the Soo Locks during a normal shipping season and extended season operation.

Table III

Historical Commodity Movement During
Normal and Extended Season
(in 1,000 Short Tons)

	Closing Date	(1 Apr-15 Dec) Normal Season	(+ 15 Dec) Ex. Season	Total Season
1948	16 Dec	113,035	-	113,035
1953	15 Dec	124,910	-	124,910
1957	17 Dec	111,000	-	111,000
1960	19 Dec	89,685	-	89,685
1965	18 Dec	94,006	192	94,198
1967	31 Dec	88,465	399	89,364
1968	4 Jan	87,841	472	88,313
1969	11 Jan	96,059	1,020	97,079
1970	29 Jan	88,805	1,424	90,229
1971	1 Feb	89,510	1,976	91,486
1972	8 Feb	93,685	3,363	97,048
1973	7 Feb	105,908	4,780	110,688
1974	All Year	92,722	9,134	101,856
1975		85,854	5,665	91,519
1976		88,057	2,935	90,992
1977		71,508	6,620	78,128
1978		100,136	6,629	106,765

3.55 U.S. Army Engineer District, Detroit Corps of Engineers Statistical Report of Lake Commerce passing through the Canal at Sault Ste. Marie, Michigan, for the season of 1978, 1977, 1976, 1975, 1974, 1973, 1972, 1971, 1970, 1969, 1968, 1967, 1965, 1960, 1957, 1953, 1948.

3.56 Although the underlying cyclical nature of the steel industry has produced savings in the amount of raw material moved, and, consequently, in the total traffic moved, total traffic through the locks has been relatively constant over the last three decades.

3.57 The population at Sault Ste. Marie, Michigan, in 1970 was 15,136 which was a 19.2% decline from 1960 figures. Chippewa County experienced a slight population decrease, 0.7% between 1960 and 1970 as demonstrated by the census data (Michigan State Universitv, 1977). In 1960 the population of the county was 32,655, this dropped to 32,412 in 1970 (Michigan State University, 1977). State population projections indicate that population growth in the Eastern Upper Pennisula is expected to be approximately 16 percent between 1979 and 2000. Most of this growth is anticipated to occur in the existing population center of the region, Sault Ste. Marie. The Eastern Upper Penninsula did lose approximately 6,000 persons following the closing

of Kincheloe AFB in 1977 (Michigan State University, 1979). This loss is expected to be more than recovered by the year 2000.

3.58 The economy of Sault Ste. Marie, Michigan, centers around the tourist trade. Each year more than 1 million tourists visit the area to view the St. Marys Falls Canal and Locks. At Sault Ste. Marie, Ontario, the Algoma Steel Corporation is the center of the economy. Pulp and paper, lumber, and related support industries are also contributing sources.

IV ENVIRONMENTAL CONSEQUENCES

4.01 Introduction. The impact assessment presented in this section is based on previous and ongoing studies conducted under the Great Lakes-St. Lawrence Seaway Navigation Season Extension Demonstration and Survey Programs, other related programs, literature review and professional expertise of various disciplines. Because no similar previous studies have been done, much of the information needed to quantify and predict impacts is missing. Under the Survey Study authority, the Corps of Engineers has recommended that environmental studies estimated to cost as much as $150 million be done prior to operating vessels on the Great Lakes year-round on a permanent project basis. Also under the Survey Study Authority, the Corps has recommended that environmental studies at an estimated cost of about $1 million should be done in concert with an effort to extend the season on the upper lakes until 31 January $\pm$ 2 weeks. A Final Environmental Impact Statement addressing that recommendation was circulated for review in October 1979. That FEIS was completed in September 1977.

4.02 This supplement to the existing Final Environmental Impact Statement addresses a proposal to extend the navigation season under existing authorities. Because of the lack of information, (some) impacts from the limited extension proposed cannot be supportatively quantified. Therefore, the assessment presented here is a "worst case" evaluation. The objective of the factors to be considered in a closure decision criteria is to minimize any impacts on the natural environment by minimizing impacts on the physical environment which can be measured. The assumption is that environmental impacts result from physical impacts and are proportional to the degree of physical impact.

4.03 The closure consideration factors as described in Section I are based, in part, on an averaging of Freezing Degree Days which have historically accumulated when navigationally significant ice has developed on Whitefish Bay. Whitefish Bay ice conditions are being assumed as indicative of the conditions on the St. Marys River system. Variation may exist, but a better indicator has not been found. It is at this point of difficulty that icebreaking assistance is required for most vessels, additional horsepower must be applied to overcome resistance, and physical impacts are increased substantially. Lock closure would be considered prior to reaching this point. The date of closure would be considered based on economics, winter conditions and environmental effects, see Section I.

4.04 This assumption does not apply to some types of potential impacts, including spills of oil or hazardous materials. If a spill should occur, the impact is not dependent on ice conditions, but is related to other factors such as volume, location, weather conditions, and speed of containment and recovery. The assumption

does logically apply to such impacts as shore erosion and structure damage, scour of the channel bottom, turbidity and resuspension of sediments, water quality, opening and closure or waterfowl feeding areas, benthic organism disturbance, fish egg mortality, animal migration, noise, and wetland disturbance.

4.05 Efforts will be continued to better define the environmental impacts of the proposed limited extension to 8 January ± 1 week. Studies planned are listed in Appendix G. The Corps recognizes that it would be preferable to first accomplish the baseline data studies recommended in the Survey Report at a cost estimated in the Draft Survey Report to be of $150 million. However, for the limited 3 to 4 week extension proposed in this document, that cost is considered exorbitant and such an effort is not proposed. Studies similar, but lesser in extent, will be conducted for those environmental values considered most likely to be affected.

4.06 Some of the statements in this document may appear to be inconsistent. While the Corps does not expect major damages to occur, a "worst case" picture, based on an assumption and opinion without quantification, has been presented. Where qualifying information exists or data has been obtained, the "worst case" picture has been modified in an attempt to place the expected impact in its proper perspective. It is believed that the information presented here is sufficient for a reasonable decision to be made on how long the locks should remain open to traffic by weighing the expected impacts against the needs of commercial navigation.

4.07 Alternatives Evaluated. The no action alternative (navigation to 15 December) would maintain existing environmental conditions. However, no additional navigation economic benefits would be realized. The selected plan (extension to 8 January plus/minus one week) and alternatives (extension to 25 December and 30 December, 31 January, and year-round navigation, would provide for additional navigation economic benefits as previously described, Section II. Environmental consequences, (e.g. magnitude, extent, persistences and probability of impacts) could increase with extension of the navigation season. The environmental consequences of extending the navigation season are, in part, related to winter conditions and vessel transits.

Anticipated Lock Operational Difficulties under the Selected Plan

4.08 Several operation problems associated with winter operation of the locks at Sault Ste. Marie, Michigan, have been observed during the Demonstration Program due to the fact that the locks were not originally designed and constructed for winter use. (Corps, FY-76 Annual Board Report). The ice upstream of the lock entrance is generally broken and fragmented from the action of wind, current and

ship traffic. Each time the upper gates are opened, delays result from the concentration of ice. Often, ice must be manually pushed out of the gate recessess, or the gate is operated in a fanning procedure by incremental opening and closing to remove ice, before the gate can fully open. Further locking problems arise because the vessel bow, on entering the lock, pushes the ice ahead and sometimes fills the lock chamber, thus preventing the ship from entering the lock. The ship must then be backed out and the ice flushed and locked downstream. Air bubblers help in preventing ice build-up in gate recesses; however, they do not fully prevent moving ice from packing into the gateways.

4.09 Once flushed downstream, the river flow carries the ice until the current decreases. Most of the ice then lodges about 500 to 1000 ft. downstream of the lower gates in Soo Harbor. A build-up of slush ice and fragmented ice occurs, leading to the development and solidification of a solid ice cover. This barrier, on occasion, has become nigh inpenetrable by cargo vessels and must be broken by an icebreaker such as the MACKINAW and flushed as far downstream as possible. This condition may possibly develop in early January during severe winter conditions. This condition is not expected to occur under the proposed plan, as navigation would have been halted.

4.10 During winter operation, alternate submergence and exposure of the vertical walls of the lock to atmospheric conditions, plus the actions of transiting vessels build up an ice collar on these walls near the high water zone. During severe conditions this ice collar dimensionally may build up to two to three or more feet thick, five to seven or more feet in vertical dimension, and extends the full length of the locks.

4.11 Unless this collar is removed, the wider ships find it difficult, to nearly impossible, to lock through. The ice collar build-up not only tends to restrict the transiting of a vessel, but also slows the movement of drift ice into the lock chamber as a vessel is entering, or when ice is being locked through to clear the upper approach. The problems caused by formation of ice collars normally does not occur prior to 8 January, as it is dependent on severity of the weather.

4.12 During the Demonstration Program, the MacArthur Lock's operational season was extended, subjecting the lock equipment to winter navigation conditions. From the experience gained in the Demonstration Program, it is known that increased malfunction is likely to occur and increased maintenance will be required on equipment utilized during a winter navigation season. Use of lock wall coatings, steam, and heating cables has been effective in managing ice on lock structures and machinery.

4.13 The Poe Lock is the principal winter navigation lock and will continue to experience increased maintenance requirements.

4.14 It has been observed that ice build-up on the sides of the vessels moving along the piers sometimes will fall off and shatter over the work and walk area, causing hazards to lock personnel. In addition, wind blown snow overhangs the pier's edge, another hazard for those who have occasion to walk to the pier's edge.

4.15 Winter operation and maintenance poses additional difficulties in the event that a man were to fall into the river. Injury is more probable because of floating ice in the water, and the water temperature is such that a man would probably not be able to do much for himself even though he had a life vest on. These conditions pose additional problems in accomplishing rescue operations. The increased potential for harm under winter conditions is recognized in the safety measures and operational procedures which have been implemented at the lock facilities. To date there have been no incidents involving a person falling into the river in the lock complex during winter operation and maintenance.

Services Provided by the U.S. Coast Guard

4.16 In addition to and not dependent on the mitigative measures discussed above, are services provided by the U.S. Coast Guard. These include provisions for emergency wind shelters, emergency ferry service and ice breaking assistance.

4.17 During 1974 and 1975, the U.S. Coast Guard prepared an Environmental Impact Statement on their traditional and anticipated icebreaking operations on the Great Lakes. Some portions of the following discussions related to icebreaking operations and environmental impacts have been extracted from that Final EIS and updates.

4.18 The magnitude of any icebreaking that takes place during extended season operations depends largely on the severity of the winter weather conditions. Even though severe weather conditions contribute to the formation of significant amounts of ice on the Great Lakes proper, the most troublesome locations for participating vessels occur within the connecting channels (St. Marys and St. Clair Rivers) and some constricted lake reaches, such as Whitefish Bay, where buildups of windblown ice can occur.

4.19 Technically, the Coast Guard icebreaking assistance provided to vessels operating in an ice environment is on an "as requested" basis. During the last three winters, icebreakers have also been assigned to prepare tracks in anticipation of vessel arrivals. In doing so, the Coast Guard has been able to reduce the number of times vessel become iced in. This sort of service has been provided in the

traditionally difficult areas such as the St. Marys River, the Straits of Mackinaw, and the Detroit-St. Clair River system. In addition, during the past winter, 1978-1979, the Coast Guard had directed tankers not to proceed into areas of heavy ice unless they were escorted by Coast Guard vessels. This has reduced the difficulty encountered by the tankers and insured a positive track for them to follow into the ice-covered port. In an effort to make better use of the ice breakers time and capability and to make the greatest possible use of tracks broken through ice, convoys of vessels were escorted wherever possible.

4.20 The Coast Guard made strong and regular pleas for vessels of low shaft horsepower to refrain from sailing during periods of heavy ice. Even when a vessel had ample horsepower to work its way through by itself, the Coast Guard would often provide ice breaker assistance to ease the strain on the vessel and minimize the possibility of accidents. The same type of plea was rendered even more strongly with regard to vessels that were not suitably designed or modified to handle the rigors of operation in ice. Vessels considered not fully suitable for ice navigation were given last priority in ice breaking assistance in order to discourage companies from using such vessels.

4.21 It is impossible to predict, to any degree of accuracy, exact locations and the extent of icebreaking support for any given winter of extended season operations.

IMPACTS UPON RESOURCES

4.22 Significant adverse environmental consequences of operation of the Poe and MacArthur locks are indirect rather than direct in nature. These indirect effects are generally related to vessel transits in an ice environment.

PHYSICAL ENVIRONMENT

4.23 Shore Erosion and Sediment Transport. Winter navigation, by disrupting the natural ice cover characteristics, may aggravate natural impacts of the ice movement. The natural impacts from ice include shoreline erosion, sediment transport, and shore structure damage. Similarly, an ice cover may even alter and even amplify the effects of navigation on system hydraulics and sediment transport.

4.24 In navigable waters, there are several ways in which vessel passage can affect sediment transport and shore erosion, including direct movement of ice in contact with vessels, propeller wash, wave action, and other hydraulic effects. The significance of these various effects depends on a number of local conditions, such as the channel configuration, water levels, soil conditions, ice conditions and the presence of other transport agents like natural currents or waves.

4.25 In the fall as the field ice is developing and becoming fast to the shore, navigation may delay the development of shore-fast ice or, in some cases, tear the shore-fast ice loose, after it has developed. It is impossible to quantify these effects on shoreline property at this time, especially in comparison with natural effects.

4.26 A boat reconnaissance of the entire U.S. shoreline bordering the navigational channel was made in May 1977. This reconnaissance was done to become familiar with geomorphic characteristics of the shore and to select sites for long term monitoring of shore erosion processes, and shore damage. Boat surveys, shore profiling, and surveys were repeated in October 1977, May 1978 and November 1978 to assess if any major shoreline changes had occurred since the previous survey and to document existing conditions for comparison.

4.27 Twenty-eight potential erosion sites along the St. Marys River were delineated during the initial boat survey in May 1977 (Appendix C). During the reconnaissance, there was no attempt to differentiate those shorelines that may be eroding due to some ship-induced hydraulic effect. (CRREL, April 1978)

4.28 Data acquired by the U.S. Army Cold Regions Research and Engineering Laboratory (CREEL) during the subsequent boat and field surveys resulted in identification of 4.8 miles of shoreline at 12 sites that may be eroding due to natural causes and to ship induced process of year-round navigation. (Appendix C)

4.29 The role of ice and cold temperatures in sediment transport and shoreline change has many facets. Ice formed on a shore or river bank may isolate and, thereby, protect the soil. Ice formation can, however, cause significant localized shoreline damage by gouging ordinarily stable beach or bank formation, removing protective vegetation, freezing sediment at the ice-soil interface, and by entrainment of sediment within the ice structure. During spring breakup, this nearshore ice may migrate considerable distances before melting and releasing the entrapped sediment. Low rates at which material is removed from a river bank or steep coastal bluff can be significant since this material is not easily replaced in nature.

4.30 Shore damage, due to the lateral movement of ice induced by vessel passage, is ordinarily small, limited to early or unstable ice conditions, and shore areas in close proximity to the navigation track. The resultant damage, while possibly significant, is unpredictable, infrequent, and difficult to quantify. It is also difficult to separate it from that which occurs naturally. A reach of shoreline could be affected over a period of years, but only a small portion of such a reach may be affected in any one year.

4.31 Navigation during the winter and normal seasons exerts a temporary influence on river hydraulics. Measurements of near bottom water velocities adjacent to the channel during vessel passage have shown changes in the water movement direction of 180 to 360 degrees, with velocities often in excess of ambient conditions. This is usually accompanied by some sediment transport.

4.32 In addition, propeller wash and the movement of water and ice away from the vessels would push ice under the adjacent ice cover on either side of the track. This ice could freeze and accumulate, forming a sort of submerged ice rampart or ridge, changing the ice topography under the water. Depending on the reach of the waterway and the magnitude of ramparting, these ridges could alter existing water currents and affect circulation patterns. Without ice control (ice boom system) in the St. Marys River, these effects could contribute to formation of ice jams and hanging dams, which could alter levels and flows of the channels. However, it has been shown on the St. Marys River that no significant effects on levels and flows have resulted from this phenomena of ice ramporting or ice ridging parallel to the channel.

4.33 The operational plan for the proposed extension to 8 January plus or minus 1 week includes factors to be considered in a closure decision to allow for winter variation. The factors, in part, are based on Freezing Degree Days (FDD) and are developed on the basis of minimal damage point. That is, before impact would become substantial, closure would be considered as described in Section I.

4.34 Shoreline Structure. Natural winter ice conditions have always subjected private shoreline structures to ice forces, sometimes causing damage. But generally, structures are reasonably well-suited in construction, extent, and location to withstand the prevalent range of forces created by ice covers, ice jams, and moving ice.

4.35 It is expected that there will be a change in the type and magnitude of winter ice forces imposed on private shoreline structures with winter navigation. The problem is to evaluate the change in the incidence and degree of damage to structures under an extended season, compared to natural conditions or traditional navigation, and to estimate the potential cost of this damage. This problem is intermediate to the larger problem of minimizing or preventing ice damage to private shoreline structures under extended navigation; this larger problem is not addressed here.

4.36 An analytical deterministic approach is not suited to the problem and so a probabilistic approach was developed. On the basis of ice conditions and channel characteristics, two groups of probability estimates were made for each reach. The first, estimates of the probability of occurrence of ice damage to private structures, deals only with whether or not ice damage is likely to occur. The

second group is made up of estimates which express the likely severity of ice damage in probabilistic terms. The probability estimates are translated into dollar costs of damage by expressing them as a precentage of structure value, wherein value is expressed in terms of cost of replacement by like construction.

4.37 The upper limit ice damage costs are given in the following table for the 60% probability level, i.e. there is an estimated 60% probability that structure damage costs will be less than or equal to the stated amount. This translates to a 40% probability that the damage costs will exceed the stated amount. For greater details on the probabilities of severity, and separate reach descriptions, see the reference document Ice Damage to Private Shoreline Structures--Great Lakes Connecting Channels, by K. Carey.

TABLE IV-1

Upper Limit - Annual Ice Damage Costs to Private Shoreline Structures for 60% Probability Level (with supplementary totals for 30% and 90% probability levels)

(in $1000's)

River and Reach	Natural Conditions or Restricted Season[1]	Traditional Season[2]	Extended Season (to 31 January)	Extended Season (to 28 February)	Year-Round Season (w/o mitigation)	Year-Round Season (w/ mitigation)
St. Marys River						
1	3.7	4.9	4.9	6.2	7.4	4.9
2	59.8	119.7	119.7	134.6	149.6	104.7
3	58.5	128.7	152.0	175.4	198.8	105.3
4	12.5	22.5	22.5	24.9	27.4	20.0
5	3.9	5.9	6.9	7.8	8.8	5.9
6	9.5	21.0	24.8	28.6	32.4	17.2
7	2.0	3.9	3.9	4.6	5.2	3.3
8	0.6	1.0	1.0	1.0	1.0	1.0
9	8.7	10.5	12.2	13.9	15.7	12.2
SUBTOTAL	159.2	318.1	347.9	397.0	446.3	274.5
(p=30%)	(93.3)	(188.0)	(206.9)	(236.4)	(265.8)	(161.4)
(p=90%)	(364.1)	(706.3)	(761.7)	(868.6)	(975.3)	(618.5)

4.38 Table IV-I estimates ice damage cost to shoreline structures for navigation season extension exceeding the proposed action. No cost estimates of damage are available for 8 January extension.

[1] Without navigation in an ice environment
[2] 15 December

However, the concept of the operational plan for 8 January extension is to terminate operations at a time when vessels encounter difficulties in navigation through ice and before major impacts arise due to vessel operations.

4.39 Vibrations. There is a unique problem that occasionally occurs adjacent to upper Lake Nicolet between Frechette Point and Six-mile Point. Based on interviews with local residents, it appears that some ships passing through this reach of the river during ice cover conditions transmit vibrations to the shore and shore structures. These vibrations are reportedly severe enough at times to cause structural damage to the buildings. Although this has been reported at several locations within this area, residents at either end of this reach and in other similar areas on the river have not experienced this problem. This is a problem that existed during mid-winter navigation. The limited season extension of the proposed plan should avoid this effect through the discontinuing of navigation through ice cover in mid-winter.

4.40. Noise. Icebreaking and commerical vessel operations noise would build up during the proposed 3 week navigation extension period. The magnitude of this impact on the adjacent areas would depend on the nature of the areas themselves. Sound generated by shipping operations in a harbor environment, during the winter, would not be greatly different than that of the summer months. Installation and operation of ice suppression equipment (e.g. bubblers) would also be a source of sound generation. However, it is expected that the normal background noise level of daily harbor operations would tend to mask these anticipated sounds. Shipping activities in riverine sections of the waterway would contrast for a short time span with former inactive winter months (of 10 years age).

4.41 Overall, noise problems are complex since they depend on distance, wind, weather, and the particular listener. While it is possible to identify and quantify sounds attributable to various operations, it is difficult to predict the subjective interpretation in a given location under varying conditions. Impacts are expected to be minimal due to the short time extension. However, permanent residents of connecting channel areas may be irritated by the continuation of and occasional increase in noise levels. Others may consider the activity of winter navigation of interest.

BIOLOGICAL ENVIRONMENT

4.42 Impacts of extended navigation season operations could be incurred through icebreaking, vessel movement, and installation and operation of ice control structures. Open, deep water areas of the Great Lakes and ice free harbors are not foreseen as being significantly affected by extension of lock operations to 8 January. Nor is the proposed bubbler system foreseen as significantly

affecting the local environment. Studies of the bubblers have not resulted in findings of significant impacts.

4.43 In the vicinity of proposed and related activities the majority of impacts would occur in the nearshore zones. Within these areas fish, wildlife and their habitats could be affected. Shoreline habitats deemed sensitive to the proposed action activities include littoral zone, coastal wetlands, and shallow areas of the connecting channels and harbors. Therefore, impact discussion will mainly address these sensitive areas.

4.44 Benthos. Impacts caused by icebreaking and vessel operations on the benthic community are due to physical alteration; i.e., abrasion and scour, of the sediment. This physical alteration can be caused by vessels, winds, and waves pushing the ice into shallow areas where it contacts the bottom and abrasion takes place. This action could be continuous, thus creating an unstable environment that prevents benthic organisms from over wintering in disturbed areas for that winter season. This situation has been studied in the past, and studies will continue in the future through monitoring to provide information on the significance of this impact.

4.45 Vessel operation in an ice environment increases the ship energy requirements. When increased power is applied for forcing a ship through ice, scouring of the channel bottom by propeller wash could occur. This could result in greater suspension of bottom sediments and benthic organisms into the water column than what occurs under open water conditions. Vessel operation in ice environments could also have an impact on benthic communities in shallow areas through creation of a drawdown and surge of waves in constricted channel zones. These impacts occur during the normal navigation season, but are probably of lesser significance at that time due to lower water velocities generated by propellers and the higher environmental stress usually associated with lower water temperatures. The degree of impact increases with the difficulty encountered by the vessels in transiting the channel, and the factors to be considered in a closure decision is designed to halt navigation through the locks when this point is reached.

4.46 Benthic dislocation due to vessel induced waves was studied on the St. Marys River during the Winter 1978-79 (Gleason, et. al. 1979). Results of this investigation of year-round navigation found that for one meter length of pressure crack, approximately 10 organisms were displaced per vessel passage, or 0.1% of the total existing benthic populations below the sample sites.

4.47 Early winter fractures in the ice cover (pressure cracks) occurred very close to shore and produced only water and some fine sands. These reaches of the littoral zone are, as a rule, low or devoid of benthic representatives. It is not until the shore ice has

moved out to the depth of 1 to 1.5 meters that aquatic invertebrates and vertebrates appear on the ice surface. This investigation, carried out by Lake Superior State College, indicated that surface losses in the winter of 1978-79 were insignificant in comparison to the annual mortality associated with the area studied; however, the study does document that subsurface dislocation and disruption of benthic ecology does exist. Also, the investigators concluded that the ice conditions (severe) may have affected the results, and further study under different ice conditions should be done before a definitive answer could be given.

4.48 The Fish and Wildlife Service also conducted benthic sampling during the winter of 1978-79 on the St. Marys River. The study revealed no significant differences ($\alpha = 0.05$, one-way analysis of various tests) in mean density of benthic macroinvertebrates among samples collected at different locations, water depths, and months. However, subsequent evaluations of the reliability of these tests showed they could have failed to detect significant differences in mean densities 45% of the time at locations and 60% at depths (FWS, Poe et. al. 1979).

4.49 In addition, the U.S. Fish and Wildlife Service has theorized that dredged commercial navigation channels could be serving as dispersal routes or places of refuge for mobile benthic organisms during periods of extremely cold weather. Passage of vessels during such times could possibly dislocate these organisums, resulting in a high rate of mortality and causing a significant drop in aquatic food production for fish. Impacts of such an occurrence would not be immediately noticeable but could show up in reduced production or in reduced species diversity several years in the future. Also, in theory, the halting of vessel traffic prior to extreme weather periods should keep such effects to a minimum. However, sufficient information does not exist to determine the degree of impact expected.

4.50 Primary Productivity. Changes in ice cover due to icebreaking, vessel passage and vessel induced turbidity could affect the primary productivity in the area for a brief period. Solar energy entering a body of water is converted by microscopic, planktonic algae via the photosynthetic process into chemical energy and stored within the organism. Areas of open water contribute to productivity, while areas of thicker ice would decrease productivity. For the proposed 3-4 week extension, such effects on primary productivity are considered minor. Major changes in ice cover are not expected for this period.

4.51 Increased turbidity could adversely affect the river plankton in several ways. Suspended sediment in rivers can act as an opaque screen to all wave lengths of light, thus limiting phytoplankton photosynthesis. Photosynthetic activity is naturally low during

periods of ice cover and can be further reduced by increases in turbidity. Sedimentation can also contribute to lower plankton numbers in that large quantities of suspended particles can hasten the settling of plankton.

4.52 Turbidity resulting form vessel propeller generated currents (prop-wash) is generally short term in nature and is not foreseen to produce significant impacts under the proposed extension; however, no quantification of resuspension sediments is available. Propeller wash is a fairly localized disturbance, affecting the area immediately adjacent to the vessel. Propeller wash or bottom disturbances could be intensified during times when a vessel "squats" in shallow waterways while pushing an ice field. This squating effect brings the vessel's propeller into closer contact with the channel bottom and increased thrust is applied at the same time to overcome the resistance of the ice. A study conducted under the FY 79 Demonstration Program indicated that the rock cut area receives less than 1.5 milligrams per day of an amount of sediment settling. If the rock cut area is considered as the no traffic condition, up to a 50 fold increase (worst case) was observed at one site in the north end of Neebish Island. The study (Gleason, et. al, 1979) also pointed out that natural sedimentation during spring breakup may contribute as much or perhaps more inorganic sediment to the river.

4.53 The proposed operational plan should result in termination of lock transits prior to significant ice resistance.

4.54 Fisheries Resource. Bottom sediments resuspended by vessel movements are transported downstream by river currents and the subsequent deposition of this sediment in river beds has the potential to damage fish populations by decreasing embryo survival, reducing available food organisms, and reducing fish habitat.

4.55 Several impacts to fish spawning could occur. Of particular concern are the lake herring and whitefish in Lake Superior and Lake Huron. Eggs of these species are laid in late October, November and December and take about 160 days to incubate at 34°C. These eggs lay in and on the bottom sediments for most of the winter, and in some cases, may be near the channel. Ice restraints to vessel movement could create additional turbulence by propeller wash in areas where vessels are drawing near maximum draft. Redistribution of bottom sediments over active fish spawning areas could bury incubating eggs resulting in increased mortality rates. This conceivably could result in a substantial decrease in population of these two species, but data are not available to allow prediction of the degree of cumulative effect.

4.56 A study on the St. Marys River system was initiated to locate the spawning groundbeds of these two fish species and to determine the

amount and classification of the sediments deposited over these spawning grounds. It was found that vessel traffic could increase the amount of natural suspended sediment in the river. This information was gathered during a winter which saw minimum entrapment of vessels and a reduced amount of heavy icebreaking. No conclusion about the effect of this sedimentation on the fish eggs could be drawn from the data gathered due to difficulty in the recovery of eggs. However, if the lake herring eggs are more susceptible to sedimentation during early stages of egg development, winter navigation may be a factor in mortality rates (Gleason, 1979).

4.57 Two selected sites in the St. Marys River, Frechette Point and Six-Mile Point, were studied January-April 1979 to provide a base of information for evaluating the effects on fish, fish-food organisms, and fish habitat from ship-induced under-ice surge waves caused by vessel passage in the adjacent ice-covered navigation channel (Poe Edsail, and Hittumen, 1979). Results of the study found that the total density of benthic macroinvertebrates was higher at the low impact sites in most cases. However, no decrease in density of benthic macroinvertebrates was found due to vessel related disturbances throughout the study. Examination of drift net fishing and vessel passage records revealed a large increase in the amount of drift which occurred as a result of vessel passage during the period of solid ice cover. The significance of vessel-induced drift cannot be demonstrated with the available data. However, the biota and detritus in the drift net catches may constitute an important energy resource which, when accelerated transport occurs, may be lost to the system from which the material was transported. Light penetration monitoring revealed that vessel passages cause decreased light penetration and increased turbidity. This conceivably could affect sight feeding fish by reducing the field of vision and may also impair respiration of aquatic organisms in the immediate area through the clogging and plugging of respiratory membranes. The degree or extent of this potential effect cannot be determined with existing information. Studies to provide this information will be continued.

4.58 Vegetation. Extended navigation operations resulting from extended lock operations could result in the lateral and vertical movement of ice adjacent to shorelines. This ice movement could disrupt shoreline, littoral zone and wetland vegetation.

4.59 In wetland or shoaling areas near the navigational channel, damage due to hydrodynamic effects of vessel passage could occur even though shore erosion may be neglible. With shallow water depths, ship-induced water velocities and water level changes can possibly disturb and damage vegetation by causing water and ice movement and gounding of ice cover during vessel transits (CRREL 1978).

4.60 Wildlife Resources. Waterfowl and raptors were observed on 60 days in the St. Marys River - Whitefish Bay area from January through

April 1979 to assess the impacts of winter navigation on such birds (Robinson and Jenson, 1979). About 1000 ducks were present in January, with mallards, common goldeneyes and common mergansers as the most abundant species. The most frequently observed raptors were a pair of adult bald eagles. Mortality appeared to be very low during the winter of 1978-79.

4.61 Critical areas occupied by wintering duck populations include the St. Marys Rapids, the Edison Soo Hydro Plant outfall area, and open water stretches along the Canadian shore at Sault Ste Marie. For the eagles, two perch areas along the northeast shore of Sugar Island were important.

4.62 The direct impact of shipping during the relatively light shipping winter (1978-79) on waterfowl and raptors was minor, the only observed effects being flushing of ducks and eagles. Indirect effects, such as the influence of ship-caused turbidity on duck foods or the scouring action of ice pushed by ships on vegetation, were not assessed.

4.63 The U.S. Fish and Wildlife Service (FWS) conducted field surveys during the period of 7 January to 25 March 1979 in which 12 avian species were observed (Appendix J). The FWS observed no specific interaction between vessel transits and any avian species. However, behavior studies were not conducted. (FWS, June 1979)

4.64 The effects of proposed extension to 8 January are expected to be minor; however, a serious potential impact of winter shipping (as with any other season) is the possibility of spillage of oil or hazardous materials.

4.65 The opportunity for mammals to cross water barriers is important in influencing (1) the distribution of species of mammals by permitting range expansion into favorable habitat, (2) the nourishment and sustenance of small populations by immigration, and (3) the accessibility of seasonal resources such as food or shelter for a mobile population. Mammals cross water barriers either by swimming, by "rafting" (floating on logs, etc.) or by walking on ice. For mammals which are active in winter, the latter is probably the most important means of travel. The maintenance of open water and human activities associated with it during the winter could seriously influence the mobility of mammals and serve to isolate certain populations.

4.66 In the eastern Lake Superior - St. Marys River area wolves (Canis lupus), coyotes (C. latrans), foxes (Vulpes fulva), lynx (Lynx canadensis), bobcats (L. rufus), moose (Alces alces), deer (Odocoileus virginianus) and probably several other smaller mammals use ice as a means of dispersal. The eastern timber wolf, designated as a endangered species in the United States, has been maintaining

very small populations in Michigan's Upper Peninsula. It is believed that most of the wolves are immigrants from Ontario to the east and possibly from Minnesota to the west. Wolves have been seen occasionally crossing to Michigan from Ontario on the ice of Whitefish Bay. There is, as far as is known, practically no quantitative data available on the extent to which mammals use the ice of eastern Lake Superior and the St. Marys River as a means of dispersal. There is need for review of historical literature as well as detailed observation of present mammalian activity and movement patterns. Likewise, there is no information as to whether winter ship channels present significant barriers to mammal movements or whether the animals are able to cross on floating ice that may fill in behind the ships. Deer have been observed crossing an ice filled vessel track within 15 minutes of vessel passage or swimming open water tracks, but other species may not desire to cross the disturbed area of ice.

4.67 During the winter of 1979-80, a study entitled Effect on Winter Navigation on Mitigation and Dispersal of Land Mammals in the Eastern Lake Superior and the St. Marys River Area, will be implement. The objectives of this study are to (a) To evaluate the importance of continuous ice as an aid to crossing water barriers for dispersal and migration of mammals; and (b) To assess the effects of maintaining shipping channels upon the movements of mammals.

4.68 Field observations by the FWS during the winter 1978-79 indicated that the river area near Mirre Point is heavily utilized by the local deer population in crossing the navigational channel. This is based on the extensive number of deer tracks discovered on the ice in that area (FWS-June 1979).

4.69 Migration of mammals that use ice cover for crossing water barrier could temporarily be disrupted during the 3 week season extension if a hard winter produces early ice cover and stressed range conditions. The opportunity for mammals to cross water barriers may be important in influencing the distribution of species of mammals by permitting range expansion into favorable habitats for a mobile population.

4.70 Endangered/Threatened Species. According to the Federal Register containing the list of Endangered and Threatened Wildlife and Plants (January 17, 1979), the following endangered and/or threatened species found within the project area:

American Peregrine Falcon (Falco peregrinus anatum)
Arctic Peregrine Falcon (Falco peregrinus tundrius)
Bald Eagle (Haliaeetus leucocephalus)
*Gray Wolf (Timberwolf) (Canis lupus)

*Threatened in Minnesota, Endangered in Illinois, Indiana, Michigan, Ohio, and Wisconsin.

4.71 Both the American peregrine falcon and the arctic peregrine falcon are migratory species in this area. Since there are no known falcon nest sites in the project area, the proposed extension of the operations of the locks should have no affect on these birds.

4.72 Recent studies have identified two bald eagle perch areas along the northeast shore of Sugar Island in the St. Marys River. One of the studies states that it appears that shipping has no positive impact on the eagle, but may have a minor negative impact by causing the eagle to shy away from the vicinity of ship traffic. This may temporarily restrict space for the eagles and cause excess expenditures of energy by the birds when flushed during ship passage. Indirect effects include the influence of ship caused turbidity and scouring on vegetation used as duck food, (in turn, eagle food) and the potential spillage of oil or toxic material during shipping injurious to water related birds. (Robinson and Jenson, June 1979).

4.73 The gray wolf (timber wolf) has been maintaining very small populations in the western and central regions of Michigan's Upper Peninsula. There have been no recent sightings of the gray wolf in the St. Marys River area on the United States side, but there have been sightings, by conservation officers and trappers, on the Canadian side of the St. Marys River. According to wolf experts, the St. Marys River area does have favorable habitat for the gray wolf, but due to a coyote bounty in the State of Michigan and pressure from human development, there are currently no resident, breeding populations in this area. There is a study underway to determine the effect of winter navigation on migration and dispersal of land mammals (including the gray wolf) in the project area.

4.74 In accordance with Section 7 of the Endangered Species Act of 1973, as amended, the Corps of Engineers has consulted with the U.S. Fish and Wildlife Service, Region III. It is the biological opinion of the FWS that the proposed extension to 8 January of operation of the locks at Sault Ste. Marie, Michigan, is not likely to jeopardize the continued existence of the northern bald eagle.

4.75 In reference to other endangered and threatened species, the Arctic peregrine falcon (Falco peregrinus tundrius) and the American peregrine falcon (Falco peregrinus anatum) only migrate through the area and no known potential nesting habitat exists within the project limits. Since no perch or resting trees will be disturbed, it is the biological opinion of the FWS that the project action, as proposed, is not likely to jeopardize the continued existence of the Arctic or American peregrine falcon.

4.76 The gray wolf (Canis lupus) is a known inhabitant of the Upper Peninsula of Michigan and favorable habitat still exists in that

area. It is suspected that the gray wolf populations in the Upper Peninsula are maintained by animal crossings from Ontario, Canada. Since no studies have been conducted to determine the effects of lock operation extension (i.e., winter navigation) on land mammals, the FWS cannot provide an opinion on the gray wolf at this time and will withold a final biological opinion on the effects of the proposed project until sufficient information is available.

4.77 Since sufficient information will not be available until completion of the study on mammal migration, the COE has requested additional assessment and consultation time beyond that required by law (180 days) before a final FWS biological opinion can be rendered. The COE has also requested that the proposed limited season extension be implemented for which the study could monitor the effect of vessel passage. The proposed operational plan for closure of the Soo Locks may or may not prevent interference with migration of the gray wolf.

4.78 Section 7 coordination letters concerning endangered/threatened species are presented in Appendix H of this document.

4.79 Oil and Hazardous Substances Spills. These spills represent a potential adverse impact to the environment. Spills in winter, should they happen, could be considered especially serious due to the combination of conditions which could slow down recovery of the oil and the relatively unknown effects of the dispersion of oil in an ice environment. Very few oil or hazardous substance spills occurred during winter months previous to the Demonstration Program. To date no significant spills have resulted from winter navigation along the St. Marys System.

4.80 The U.S. Coast Guard, under the National Oil and Hazardous Substances Contingency Plan, would bear primary responsibility for coping with actual and potential spills. The Coast Guard has stated that the probability of a spill in winter is reduced for the following reasons: (1) When vessel traffic continues through an extended season, tracks are established by preceding ships and the risk of collision or grounding is less; (2) Vessels moving through ice are not able to move at high rates of speed; they are not able to move out of their tracks with ease; when they do start to get out of the track, it is relatively easy to stop them because of the friction effect of ice; (3) There is a reduced number of vessels operating; and, generally, they are operating with an escort when they are in difficult waters; and (4) with lake waters covered or largely covered by ice, the effects of wind and waves are considerably reduced; and ice between ships tends to serve as a buffer to keep vessels away from danger.

4.81 The U.S. Coast Guard has developed a number of excellent contingency plans for spill clean-up and containment. Response time

has been reduced to a few hours and good equipment is available for various types of oil spills. However, comments received from public workshops and letters from individuals, agencies, and organizations strongly indicate a desire for further improvement of the ability to handle spills in an ice-water environment.

4.82 A study recently completed entitled Review and Evaluations of Existing Contingency Plans and Response Capabilities to Oil and Hazardous Substance Spills in a Winter Environment on the Great Lakes System and St. Lawrence River, St. Lawrence-Eastern Ontario Commission, 1979, reviewed 20 plans--international, national, regional, subregional, and state--and provided the following conclusions:

(1) The effectiveness of all three major phases of oil spill mitigation are significantly impaired by winter conditions, especially the presence of ice.

(2) The state-of-the-art of hazardous substance spill mitigation might best be termed as poor to practically non-existent as there is a tendency for most hazardous substances to disperse rapidly when they are spilled.

(3) Winter conditions can reduce impacts of hazardous substance spills since rates of movements and chemical reactions vary directly with temperatures.

(4) Strong currents and rough water tend to inhibit mitigation by increasing the movement and mixing of spilled materials.

(5) Unless spills of hazardous substances are immediately handled, little on-site mitigation is possible, regardless of environmental conditions.

4.83 Oil spills could occur from two basic sources; vessels or shore facilities, and in one or a combination of the following major environmental conditions: in water with no ice present, in water with broken ice, and on or under a solid ice cover. The following is a discussion of the various clean-up procedures used for oil spills under the major environmental conditions listed above.

1. Oil in ice-free waters

The performance of the containment methods used in ice-free waters - mechanical barriers, and herding - is greatly affected by environmental conditions.

Mechanical booms cannot be used to contain oil in currents exceeding certain critical water speeds of 0.3m sec-1 (Department of Navy, 1977 as in Palm, 1979), or at best 0.46m sec-1 (Graebel, 1979 as in Palm 1979). However, booming techniques have been developed

for use in swift currents. These methods channel the oil to the river's edge where the current is minimal and recovery is possible.

The pneumatic barrier utilizes air as a barrier; however, these types of barriers are ineffective in currents C 0.3m sec-1 and strong winds (Wardley-Smith 1976 as in Palm 1979).

Herding, both chemical and physical, has been widely used with encouraging results (Wardley-Smith 1976 as in Palm 1979). Chemical herders can be effective in open waters, but may be ineffective when winds are > 1.8m sec-1. Currently, there is not sufficient data to determine the effect currents would have on the efficiency of the herder.

Recovery of oil in ice-free water is done either by the use of skimmers and/or the use of sorbents. The various skimmer types differ considerably in the effectiveness in high waves and fast currents. For any given grade of oil, there is at least one type of skimmer that is effective in the given wave and current conditions.

On the other hand, extreme waves and current conditions could enhance or reduce effectiveness of sorbents depending upon the frequency and amount of contact between sorbent and oil and the turbulence of the water.

2. Oil in broken ice

Special problems arise with this type of oil spill since virtually no equipment has been designed specifically for use in broken ice. Evaluation of various recovery devices shows that booms with non-inflated buoyancy members are able to avoid puncture damage, reserve buoyancy to compensate for icing, and have adequate strength to withstand some ice loading (Schultz et al, 1978, as in Palm, 1979). Work is underway at Environment Canada to perfect an oil-ice boom which creates an ice-free area behind which conventional containment recovery operations can take place.

Tests on skimmers, by Arctec, Inc., have found four currently marketed skimmers to be potentially effective in broken ice conditions.

3. Oil in water under ice

If an oil slick becomes trapped under a solid ice cover, surveillance, containment, and recovery become very difficult. Two recovery techniques are used in this type of an oil spill.

The first technique that has successfully been used is to cut a slot on the periphery of the slick, insert plywood sheets, and allow the sheets to freeze into place. The plywood acts as a

incontainment barrier, so that once they are in place and the oil is contained, holes are drilled in the ice and the oil is pumped out through them (Sittig 1978, as in Palm 1979).

The other technique is trenching. This involves cutting channels in the ice that divert oil into a centralized slot for recovery. This technique, although exposing the oil, may be hi dered by low temperatures which can freeze the water in the channels (Schultz et al. 1978, as in Palm, 1979).

4. Oil on ice

In this situation, many conventional containment cleanup techniques do not apply. Surface active agents have no apparent effect and dispersants were not designed for oil-on-ice situations. The only possible techniques are burning and removal.

Burning, ignited by kerosene-soaked rags, is efficient only with a minimum pool depth of 0.635 cm and winds around 0-7.21m sec-1. Tests with Prudhoe Bay crude oil revealed that achievement of 90% combustion was possible; however, after burning, a tar-like residue is left which tends to complicate the final cleanup effort. For burning to be successful, oil must be free of snow cover.

4.84 Hazardous Substances. Effectiveness of mitigation techniques is dependent on the physical and chemical characteristics of the particular substance involved. Since most hazardous substances are water soluable or gaseous and, therefore, disperse rapidly once they enter the environment, most mitigation techniques are relatively ineffective unless initiated immediately and the spill is very limited in scale.

4.85 Containment of hazardous substance spills is virtually impossible since most of these substances disperse quickly away from the point of introduction. Moreover, when dumped in water, many substances will react almost instantaneously and disassociate into non-toxic components. Thus, containment is possible only if mitigative measures are started immediately after the spill and the technique prevents further diffusion of the chemical away from the site.

4.86 In calm waters, either pumping out or skimming contaminated water may be effective. However, any disturbances such as wind or current increases mixing thus decreases the efficiency of these methods. It is unlikely that containment would be possible when wave heights exceed 0.3m, a common occurrence in the open waters of the Great Lakes. Currents greater than C. 0.3m sec-1, also common in connecting channels, would also preclude effective containment (Palm, 1979).

4.87 Recovery of hazardous substances is accomplished through three well known methods: (1) absorption on activated carbon, (2) precipitation with sodium sulfide, and (3) capture by ion-exchange resins. However, the effectiveness of these measures is dependent on how soon they can be implemented and the environmental conditions.

4.88 The most useful method of recovery is the long-term recovery. Since many of the persistent compounds concentrate in certain parts of the ecosystem, especially in sediments and detrius, on shorelines, and in the biota, dredging can be used to remove these contaminated sediments. Dredging, however, can adversely affect the environment by disrupting bottom communities, increasing turbidity and causing undesirable materials to be released into the water.

4.89 Other long-term methods include harvesting of biota such as certain species of birds and large fish and bivalves which tend to concentrate high levels of hazardous substances. Aquatic rooted plants and Cladophora a benthic algae, are also known to concentrate certain hazardous substances including heavy metals.

Neutralization is another possible mitigative measure; however, it has three serious drawbacks:

(1) limited utility when containments has dispersed;
(2) unknown efects on the environment; and
(3) variations in performance dependent on environmental conditions. (Palm, 1979).

4.90 Effects of winter conditions on mitigative measure is just now being understood fully. It has been found that ice conditions affect the behavior and mitigation of most spilled hazardous substances in that cold temperatures reduce chemical activity and tends to aid mitigative measures. However, extreme cold weather seriously impairs human performance and also the performance of certain mitigative devices. Unlike oil, hazardous substances move freely under ice cover, but like oil, these substances move slowly when spilled on ice. This facilitates removal by causing the substance to freeze into a solid sheet.

4.91 Additional information concerning oil and hazardous spills including a scenario for the St. Marys River and the biological effects of a spill may be found within the Draft Survey Report (COE, March 1979). Statistics on commerce passing through the locks at Sault Ste. Marie are contained in Appendix D, Table D-13 and Table D-14, cite the hazardous materials transiting the locks in Canadian and U.S. vessels for the periods of 17 December thru 31 March.

4.92 Energy Effects. The energy savings likely from the limited extension proposed is shown in Table IV-2. This estimate is based on the Energy Impact Analysis for the overall season extension, as

discussed in the Survey Study. The analysis measured the change that extended season navigation would have on the energy consumed in line haul freight operations as a result of traffic being diverted to the Great Lakes system from other modes and Great Lakes traffic redistributed from the normal season as a result of altered stockpiling patterns. Increased transit times and delays were also included for the various sized vessels operating in the system, as well as the energy expended by the facilities and operations (such as bubblers, icebreaking, tugs, and ice control) required to support extended season navigation. The savings of full season extension have been adjusted and prorated to approximate the energy consumption and savings associated with the limited extension of operations at the Soo Locks proposed in this report. Since energy expenditures would be less in early winter than the average over the entire winter, the savings shown are highly conservative.

4.93 Social Effects. Historically, people who lived along the ice-affected regions of the upper lakes adapted their life styles to the shipping inactivity of winter months. When winter comes and ice covers these waters, the local population uses the ice for transportation by foot, sleds, snowmobiles and, in some cases, by auto to travel to and from the islands. Winter transportation access is a very important consideration for the roughly 600 permanent residents on Drummond Island, 450 on Sugar Island, 50 on Neebish Island, and 10 or so on Lime Island. During the Demonstration Program, the attempts by shippers to operate as late as possible seriously interfered with these traditional modes of transportation for residents of Sugar and Lime Island. At Drummond Island, some interference has been claimed, and the situation merits further study. Neebish Island residents are not directly impacted, as the navigation route does not follow the West Neebish channel which residents cross to reach the mainland during the winter. Efforts and expenditures by the Corps have been made to minimize or eliminate any interference with island transportation. Such efforts have not always proven satisfactory to all.

4.94 An airboat was provided by the Corps during the Demonstration Program for winter residents of Lime Island. An alternative mode of transportation from some other entity would be required for the proposed extension beyond approximately 25 December to offset local transportation disruptions due to maintenance of the channel through ice.

4.95 At one critical ferry route in the St. Marys River, at Sugar Island, Michigan, the Corps of Engineers installed a bubbler-flusher system to reduce ice jamming at a ferry landing and modified and ice strengthened the privately-owned ferry to better enable it to operate during the extended seasons of the Demonstration Program. Use has been made also of Coast Guard vessels to keep these ferries operating

TABLE IV-2[1/]

SUMMARY OF ENERGY IMPACTS FOR LIMITED SEASON EXTENSION
(Billions of BTU's Per Year)

Energy Impact Area	BTU's
Net Line Haul Savings	238
Less Infrastructure Energy Use:	
Icebreakers	62
Air Reconnaissance[2/]	7
Bubblers	20
Local Tugs	3
Tugs for Locks	33
Semi-Permanent Ice Controls	13
Other Associated Impacts	17
Total In Frastructure Costs	155
Net Energy Savings	83

[1/]This Table is derived from the energy impact study performed for the Survey Study to extend the navigation season year-round, and should not be construed as an final energy impact analysis for limited season extension. The above figures are simply a proration of the energy impcts displayed in the energy study for year-round navigation, and are, therefore, conservative for the early winter period.

[2/]If required.

and, when ferries were unable to operate, to actually transport islanders back and forth. Installation of the bubbler-flusher is considered necessary under the proposed extended season to maintain ferry service during navigation beyond 30 December, approximately. Future installation of a bubbler-flusher system would need to be accomplished by some entity other than the Corps.

4.96 The ice booms utilized under the Demonstration Program would further insure reliable ferry service to Sugar Island residents while at the same time reducing the potential for ice jams, with resultant adverse effects. Navigation beyond 30 December would require the installation of ice booms in the St. Marys River above Sugar Island. The ice booms would be beneficial even in the absence of lock operations after 15 December.

4.97 Recreational Effects. Ice fishing and snowmobiling are the two most prevalent forms of winter recreation on the Great Lakes. Other activities include ice boating, sail skating, ice skating, travel by other vehicles and cross-country skiing when snow and ice conditions permit. The degree of impact icebreaking activities has on forms of recreation is dependent on winter weather conditions. Mild winters naturally result in a decrease in early winter recreational activities on the Great Lakes when compared to more frigid winters which allow for more favorable ice conditions. The proposed extension of navigation would not occur during the period of thick ice cover.

4.98 Recreational Effects. Under extremely cold early winter conditions along the St. Marys River, ice fishing could be negatively impacted should weakening of the ice cover result from vessel pasages made prior to 8 January $\pm$ one week. Affected areas along the river could include Waiska Bay, Mosquito Bay, Brush Point, Big Point, Sugar Island on Lake Nicolet, and Raber Bay, Maud Bay, and Lake Munuscong along the Michigan shore (Recreational Assessment Report: Extended Navigation Season Harbor Study, Bureau of Outdoor Recreation, 1976; and Navigation and Winter Recreation, Gleason and Behmer, Bureau of Outdoor Recreation, 1975). However, weather conditions severe enough to cause the ice to set solidly so early in the season would likely invoke the consideration of closure of the locks as described in Section I of this Final Supplement.

4.99 Disruption of the ice cover has also been encountered in five harbors with winter navigation activity. These are Duluth/Superior in Minnesota and Wisconsin; Escanaba, Saginaw Bay, and Lake St. Clair in Michigan, and Sandusky, Ohio. Only in Lake St. Clair does the combination of early season ice formation and early extended season traffic (through the Soo Locks) prior to 8 January $\pm$ one week raise the possibility of impacting ice fishing activity. Given the

situation of traditional local traffic moving to Port Huron and Sarnia throughout the winter without need to transit the Soo Locks, it does not appear that traffic moving through the system as a consequence of extended lock operations would, exacerbate any potential impacts on early season ice fishing in Lake St. Clair. Most of the ice fishing takes place some distance from the navigation channel in any case.

4.100 Harbors Impacted. The proposed limited extension of operations at the Soo Locks would impact those harbors that primarily handle iron ore. Vessel movements during this time period for the 1978-79 shipping season were primarily from Lake Superior ports such as Duluth-Superior, Silver Bay, and Two Harbors; to Lake Michigan ports such as Chicago and Gary; or to Lake Erie ports such as Detroit, Cleveland, and Toledo. The principal commodity moved is iron ore. Canadian vessels also typically move significant amounts of grain during this period. Vessel movements for the time period in question were traced for the past ten years which revealed that the pattern of movements for the shipping season of 1978-79 is typical of the type harbors that would be impacted if the Soo Locks are kept open during this time period. Appendix E, "Vessel Movements During the Winter 1978-1979, 15 December to 15 January," shows these patterns in raw tabular form.

4.101 Historic Sites. Activities included during the Demonstration Program, proposed for the present extension of navigation, have had no known effects on the archaeological resources of the Great Lakes Basin, specifically in the project area. Environmental statements for Demonstration Program activities conducted during 1974 through 1979 were coordinated with the Advisory Council on Historic Preservation, the Curator of Great Lakes Archaeology and the Director, Michigan History Division/State Historic Preservation Officer. In each of these years, these agencies and individuals stated that the proposed program would have no perceptible effect on historic resources. Since the proposed extension of winter navigation occurs primarily in the same areas and for a shorter time, it is anticipated there will be no effects on existing archaeological/historic resources in areas in which the vessels have operated in the past. Coordination with the State of Michigan Historic Preservation Officer has confirmed this view (Appendix F).

4.102 With regard to the extended operation of the Soo Locks, Section 122 of Public Law 91-611 outlines additional areas of impact that require evaluation in relation to the proposal. During preparation of this supplement, the following parameters were evaluated.

Displacement of People
Community Cohesion
Community Growth
Tax Revenues
Displacement of Farms
Air Pollution

4.103 The extended operation of the Federal facilities at Sault Ste. Marie, Michigan, would have little, if any, effects on the areas outlined above. Appendix K displays in tabular form the possible impacts of different extended season operations on various social, economic, and environmental concerns.

Mitigative Measures

4.104 Lime Island-Alternative Mode of Transportation. Environmental impacts resulting from the operation of the air boat have been identified as expenditure of fossil fuel and release of combustion products into the atmosphere. Provisions of such a vehicle if needed for the residents of Lime Island may be considered a mitigating measure for inconveniences arising from extended season operations, since the vehicle would restore a means of transportation to the affected parties. The previously used air boat has exceeded its useful lifetime and a new vessel or alternative mode of transportation is needed prior to extended season operation. However, this measure would not be undertaken by the COE and would have to be implemented by some other entity in order for navigation to proceed.

4.105 Use of Rock-Filled Scow and Craneweights in the Soo Harbor. The installation of rock-filled scows and craneweights in Soo Harbor assisted in the stabilization of ice cover in the lower end of the harbor during the winters of 1976-77, 77-78, and 78-79. The scows and craneweights have been removed by mid-April each year. This annual installment and removal may have the following potential impacts: disturbance of benthos, displacement of fish, and temporarily increased turbidity. However, these impacts are considered minor and of short duration. Details can be found in the FEIS for the Extended Season Navigation Extension Demonstration Program, FY 1979. These items will be installed by the Corps of Engineers under existing authorities with funds provided for winter operation in the Corps' budget.

4.106 Operation of the Sugar Island Bubbler-Flusher. The bubbler-flusher would have to be installed on the new dock by some entity other than the COE. The former bubbler-flusher system proved to be successful when there was open water in the adjacent channel, and the operation did not cause any observable beneficial or detrimental changes in the environment. It was installed near the surface of the water, away from the bottom, and was only operated intermittently by the ferry operator. If the navigation channel

downstream of the ferry slip was ice jammed, the effectiveness of the system was reduced.

4.107 No changes in turbidity were observed with the operation of the bubbler-flusher system. During the operation of the system, the compressed air released into the water may have influenced to some extent the dissolved oxygen content of the water in the proximity of the bubbler. However, in view of the large water volume passing down the river, the amount of oxygen delivered to the overall river system must be considered negligible. Operation of the bubbler-flusher from FY 73 through FY 78 caused no increase in turbidity, as observed each season.

4.108 No observable benthic disturbance was caused by the installation of the bubbler-flusher system.

4.109 The Sugar Island bubbler-flusher system was installed for the purpose of facilitating ferry movement into the mainland dock by flushing out accumulated ice. The dock is adjoined by a city park, Mission Road Park, on the upstream side and by a Rotary Service Club on the downstream side. The operation of the bubbler would likely have no effect on the usage of these parks, since usage primarily occurs in the warmer months.

4.110 Ice oriented recreation in the vicinity of the Sugar Island ferry and its operating lane is minimal, due to the natural occurrence of open water in the ferry lane between the island and the mainland.

4.111 Installation of the Ice Booms, Little Rapids Cut, St. Marys River. The effect of reinstalling ice booms is expected to be negligible on water quality (turbidity), current direction patterns and water levels. Prolonged periods of cold temperatures could cause conditions which could prevent effective functioning or cause breakdown of the booms. This would result in a disruption of ferry operations, ship transit and, possibly, flow distribution of the river. Such severe ice conditions are not expected to occur prior to 8 January. These are short term disruptions and should have no overriding adverse effects. Please see paragraphs 4.111 through 4.116 for a "worst case" analysis. Steel pile anchors that were placed in the river bottom during the FY 79 Demonstration Program would again be utilized during the proposed season extension. Installation would be accomplished by the Corps under existing authority with funds budgeted for winter operations.

4.112 Installation of the ice booms during the FY 76 Demonstration Program had definite positive effects in alleviating some of the adverse effects that result when floe ice moves from Soo Harbor into the Little Rapids Cut. While the boom was operating effectively in the winter 1978-1979, no major problems were encountered in relation

to operation of the Sugar Island Ferry. In earlier years, near the end of January 1976, structural problems were encountered which caused the release of some ice into the Cut. For a short time, ferry operations were hindered. The ice boom was reinstalled for the winter of 1976-77 which was characterized by prolonged periods of cold temperatures. The icing conditions in the Great Lakes system were such that it was decided to halt winter navigation on the St. Marys River on the 20th of January. On that day an anchor cable for the west ice boom broke, halting vessel traffic for two days until repairs to the boom were completed. However, no major problems were encountered in relation to the Sugar Island ferry.

4.113 The installation of the ice booms does not materially affect current direction patterns. Current velocities tended to be 2 to 25 percent slower in February during ice cover periods than in December with open water. This is believed to be caused partly by the drag of the ice cover, the slight reduction in total flow, and by the changed flow distribution in the Little Rapids Channel and the Lake George Channel. With the information available at this time, it is not possible to determine if the ice boom influenced the reduction in flow distribution in the Little Rapids Cut or if the open water reaches in the Lake George Channel reduced the ice retardation effect to allow a greater percentage of flow through the channel.

4.114 Flow distribution measurements in February 1976 indicated 3 to 5 percent less flow passing through Little Rapids Cut than during 1973 and 1974. No conclusions can be made at this time as to the effect of the ice boom on flow distribution or velocities, due to changes in measuring conditions.

4.115 Historically, natural ice accumulation in the Little Rapids Cut has periodically raised the level of the water in the Soo Harbor. This level change is of short duration, and after the ice jam breaks, normal levels return. While the ice boom was in place during the wi. ters of 75-76, 76-77, 77-78, 78-79, monitoring efforts have shown that the ice boom has had no adverse effects on the water level in the Soo Harbor. The ice boom may, in fact, reduce the probability of ice jams occurring.

4.116 As a "worst case," it is considered possible, although unlikely, that the ice boom system in Soo Harbor could fail, releasing virtually the entire harbor ice cover at one time to flow downstream. In the past, partial failures have occurred, but not since the additional strengthening and use of stabilizing structures were undertaken prior to the winter of 1977-1978. Should the boom fail, the large volume of ice released could, theoretically, cause gouging of nearshore shallows to increase and cause substantial damage to any structures hit by moving floes. The Sugar Island ferry could be halted by ice jamming in the Little Rapids Cut, and a

serious ice jam could form, resulting in partial river flow blockage and a potential for flooding.

4.117 Such an occurrence would be immediately known to the Corps. The boom installation includes a sophisticated alarm system with back up systems which is monitored 24 hours a day by the lockmaster. At numerous strategic points along the river, the Corps has installed automatic water level gages which are tied to the District Office by telephone systems. These are monitored on an established routine basis so that any significant change in water levels is quickly noted, surveillance is increased, and mitigation plans are initiated. Should a rise or fall continue (as determined by tenths of a foot), the ice jam would be broken up by U.S. Coast Guard icebreakers. To date, no such action has been required because the vessel traffic itself normally breaks up any jams during the formation stages. Because of the size of the St. Marys River, ice jams cause only relatively slow water level changes, allowing considerable time (normally more than 24 hours) for the situation to be corrected before flooding could begin to occur. The level of risk of flooding is believed to have been reduced to an acceptable level -below that which nature causes in the absence of shipping.

4.118 The "worst case" assumption means that the built-in safety measures fail to operate, including back-up measures, and a flood results. Such an occurrence is considered a very remote possibility. Even if the automated devices failed, the lockmaster, Coast Guard, and District Office would be almost immediately notified of the pending failure through casual observation of the harbor or by notice from river area residents or the operator of the Sugar Island ferry.

4.119 It is considered by the Corps of Engineers that the proposed action is consistent with the Approved Coastal Zone Management Program of the State of Michigan. With the factors for consideration in a closure decision and the inclusion of a representative of the State of Michigan on the Interim Winter Board, significant alterations of the coastal area and associated land uses should be avoided. In reviewing the draft document for this proposal, which did not contain details on the procedure for deciding when to close and the proposed Interim Winter Board, the State of Michigan determined that the proposed action was not consistent. The Corps has requested reconsideration of this decision based on the additional information. No reply to this reconsideration request has been received as of the date of filing this FEIS.

4.20 Another impact, related to the proposed studies of the environmental baseline conditions, is the interference of vessel navigation through the locks with the collection of baseline data on environmental conditions as is proposed in the Survey Report for year-round navigation. From a scientific point of view, the most desirable situation would be to collect the baseline data in the absence of navigation from 15 December to 1 April. This cannot be done, as vessel traffic, at a lower level, will continue even if the locks are closed (to ports such as Sault Ste. Marie, Ontario, where lockage would not be required). Even though some vessel traffic would continue, the most accurate picture of baseline environmental conditions could be obtained. It should also be noted that navigation has proceeded beyond 15 December every year since 1967 and has gone year-round for the last 5 years, thereby altering "without project" conditions for many years.

4.21 Another alternative would be to use navigation to 8 January $\pm$1 week (as proposed in this document) as the base condition from which the baseline data would be taken for use in monitoring changes and predicting impacts. In other words, the baseline studies would be unable to account for impacts occurring prior to 8 January, as no "without project" condition would have been established prior to 8 January.

4.22 A third alternative, which was used by the Corps of Engineers in developing the Survey Report for year-round navigation, is the assumption of navigation to 31 January $\pm$ 2 weeks as the base case for establishment of baseline data. This assumption on the Corps' part was based on the completion of the Interim No. 1 Survey Report which recommended navigation to 31 January $\pm$ 2 weeks. As with the 8 January alternative, the opportunity to study "without project" conditions prior to 31 January would be foregone.

4.23 This issue has not been resolved and forms the basis of the request from the Fish and Wildlife Service for a memorandum on navigation beyond 15 December for a 3 year period after the winter of 1979-1980. That request is addressed in the Summary of this document under Unresolved Issues. Information on details is contained in the comments and responses for Department of the Interior, Appendix I. The Corps will continue to pursue resolution of this issue during coordination of a supplement to the FEIS for Season Extension to 31 January $\pm$ 2 weeks.

SECTION V
COORDINATION

5.01 PUBLIC PARTICIPATION

No public workshops, hearings, or meetings have been held concerning the extended season of operation proposed in this document for the Federal Facilities at Sault Ste. Marie, Michigan. However, about 30 such meetings have been held on the subject of extended season navigation in the past six years. Substantial opposition exists.

5.02 The Supplement to Operation and Maintenance of the Federal Facilities at Sault Ste. Marie, Michigan, Addressing Limited Season Operation Extension has been reviewed for compliance with the following laws:

The Fish and Wildlife Coordination Act of 1956

The Fish and Wildlife Coordination Act of 1958
Joint Meetings were held 28 September 1979 in the Detroit District Corps of Engineers office and 4 October 1979 in the U.S. Department of Interior, Fish & Wilidlife Service Regional Office, Twin Cities, Minnesota, to resolve questions and issues expressed in the Fish & Wildlife Service's 13 August comments to the Draft Supplement. Most issues were resolved with appropriate actions. Issues not resolved are addressed in the Summary.

National Historic Preservation Act of 1966

National Environmental Policy Act of 1969

Federal Water Pollution Control Act of 1972

Marine Protection Research and Sanctuaries Act of 1972

Endangered Species Act of 1973
Under Sec. 7, consultation on the effects of project actions on the American bald eagle was conducted. Results negated adverse effects. Consultation is continuing on potential impacts to the gray wolf; the Corps has requested a moratorium on the decision pending completion of a study of mammal migration in 1979-80, requiring some monitoring during vessel transits. See Appendix H.

5.03 GOVERNMENT AGENCIES

The following Federal agencies responded to the Draft Environmental Impact Statement of the proposed plan:

1. U.S. Environmental Protection Agency

2. U.S. Fish and Wildlife Service

3. Michigan Department of State

4. Michigan Department of Natural Resources

5. State of Michigan, Historic Preservation Officer

6. Eastern Upper Peninsula Regional Planning and Development Commission

7. Heritage Conservation and Recreation Service

5.04 LOCAL AGENCIES

The proposed plan would be coordinated with the City of Sault Ste. Marie and Chippewa County, Michigan.

5.05 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS STATEMENT WERE SENT

Due to the number of agencies and individuals to whom this report has been sent, only a partial list of major agencies is cited above. A complete list may be obtained through the U.S. Army Engineer District, Detroit, P.O. Box 1027, Detroit, Michigan 48231.

5.06 SUMMARY OF VIEWS AND COMMENTS

Public Concerns and Comments (Summary): Refer to Appendix I. A summary of significant concerns stated in various letters of comment and public meetings is given below.

1. Spills of toxic substances

a. No effective way of containing oil and chemical spills on St. Marys River, with ice conditions.

b. Effects of spillages should be fully recognized.

c. There needs to be an identification of critical hazard areas, including wetlands.

d. Identification of all shipment of hazardous material should be required and regulated.

e. Contingency planning/implementation should be identified for the entire St. Marys River and coordination between agencies improved.

2. Environmental studies and baseline data collection

a. Baseline conditions considered as those existing as of 15 December without subsequent shipping; referencing the Survey Study, baseline conditions are those with no navigation after 31 January (COE).

b. No baseline has been completed; without baseline, environmental assessment would be incomplete.

c. Completion of the required study on the gray wolf should have two years of baseline studies (FWS).

d. Environmental studies should be under supervision of an interagency group having statutory authority.

e. The Corps, with existing authority and minimal adverse effects referenced, should extend season to 31 January.

f. Biological and chemical monitoring criteria not identified.

g. The environmental studies completed are inadequate.

3. Shoreline erosion and sediment disturbance

a. Criteria for identifying erosion for "stop" criteria inadequate.

b. Sediment disturbance threatens fishing resources, particularly spawning success.

c. Redistribution of bottom sediments, caused by vessel passage, is an adverse environmental effect.

4. Economic

a. Federal funding of navigation extension could result in unfair subsidy, adversely affecting railroads.

b. The extended navigation period should be to 31 January because of savings and authorization.

c. Savings are not passed on to the shippers and do not result in public benefits.

5. Legal

a. Incremental extension of extended navigation is in violation of NEPA and in conflict with route of Survey Study.

b. Authorization to 31 January could undermine need for baseline studies should Survey Study be authorized.

6. Icebreaking

a. Potentially serious environmental impacts due to icebreaking include: shore erosion, shore structure damage, impairment of aquatic habitats and wetlands, and oil spill contamination.

b. Icebreaker services are costly.

c. The gray wolf range may be threatened.

7. Other

a. Adequate biological data has not been gathered to assess partial extension of navigation.

b. Cumulative and secondary environmental effects should be assessed.

c. Social effects have not been adequately addressed.

d. Monitoring should be authorized to accompany this extension.

SECTION VI
LIST OF PREPARERS

6.01. An interdisciplinary team was responsible for preparation of this document. They are:

Name	Expertise	Experience	Professional Discipline
A. J. Nicholson	Civil Engineering	6 years management of environmental, statement preparation 1 year planning of water resource development projects, 5 years other engineering Galveston and Detroit Districts of the Corps of Engineers.	Supervisory Civil Engineer
M. A. Cooper, Ph.D.	Biology	7 years of Environmental Impact preparation, field studies, contracting; 10 years of teaching general sciences, conservation education.	Supervisory Biologist
Richard J. Gutleber	Physical Science	B.S. Biology; 4 years preparation of Environmental Impact Statements.	Physical Scientist
L. H. Fanter	Wildlife Biology	3 years prepration of environmental documents; 2 years wildlife research; B.A. Biology, M.A. Biology.	Wildlife Biologist
Bob Tucker	Fisheries Biology	1 year fisheries biologist technician, U.S. Fish & Wildlife Service; 6 months graduate teaching assistant (Botany), Eastern Michigan University; 6 months research assistant (Fisheries), University of Michigan; 1 year Environmental Impact Studies, Detroit District, M.S. Aquatic Biology, Eastern Michigan University.	Aquatic Biologist

LIST OF PREPARERS (Continued)

Name	Expertise	Experience	Professional Discipline
Brooks Williamson	Aquatic Biology Coastal Geology	2 years research assistant, Eastern Michigan University; 1 year Environmental Impact Studies, Detroit District.	Biologist
D. Mastee	Biology	1 year EIS studies; 1 year waste water treatment.	Biological Technician
F. Kuznia	Zoology, Physical Science	1-1/2 years environmental evaluation.	Biological Technician
D. Woodley	Economist	B.A. Economics; 5 years social-economic evaluations.	Economist
D. Perkinson	Transportation Analysis	M.S. Transportation, M.A. Sociology; experience in transportation and social evaluations.	Transportation Specialist
M. Clinton	Social Science	B.A. Social Science; 1-1/2 years experience in social evaluation.	Sociologist

APPENDIX A

LETTERS REQUESTING EXTENSION

OF SOO LOCKS OPERATIONS

David E. Buchanan, Vice Pres.
John A. Packard, Secretary and Director - Public Relations
Vice Adm. Paul E. Trimble, U.S.C.G. (Ret.), President
Scott H. Elder, General Counsel
J. N. Carlson, Treasurer

LAKE CARRIERS' ASSOCIATION

ROCKEFELLER BUILDING
CLEVELAND, OHIO 44113
(216) 621-1107

May 23, 1979

Col. Melvyn D. Remus
District Engineer
U. S. Army Corps of Engineers
P. O. Box 1027
Detroit, MI 48231

Dear Colonel Remus:

Even though the season extension demonstration program authorization expires September 30th this year, this will not affect the requirements of the domestic bulk shipping industry's need to continue navigation into the winter as long as ice and environmental conditions permit. Consequently, we hereby request that the Soo Locks be kept open to permit shipping to continue as long as practical during the coming winter.

As you probably are aware from the news media, steel production is presently at the highest level it has been for several years. That level will require the necessary raw materials to sustain it. We see this requirement for all of the steel mills in the Great Lakes area.

This season, available vessels will be in operation to meet customer demands. Because of the heavy ice this past winter, late commencement of sailing was necessary in a number of cases for vessels that are not equipped for ice navigation. Also, marine personnel shortages may well cause temporary layups of vessels and delays that will further aggravate the situation.

You probably also are aware that pellets were railed to meet the requirements at the Gary steel plant this past winter to the extent of rail capacity in addition to vessels that were able to operate throughout the winter. Additionally, 200,000 tons of pellets were borrowed from another company in order to keep the Gary plant in operation throughout the winter.

Because pellets are a production item that cannot be moved faster than they are produced, the expensive pellet production equipment involved is operated year round and it would not be economically

practical to produce pellets on a seasonal basis. As far as storage at the steel producing facilities is concerned, most of them are pretty well locked in to their present location and do not have access to additional land for excess stockpiling purposes. Also, few of the loading facilities at the upper lakes have excess capacity for stockpiling.

Detailed shipping plans will be laid out during the fall Ice Committee meeting here at Cleveland. Your office will be notified when that meeting is scheduled.

Sincerely,

Paul E. Trimble
Vice Admiral USCG (Ret.)
President

DOMINION MARINE ASSOCIATION
REPRESENTING CANADA'S INLAND WATERS AND COASTAL SHIPPING FLEET

SUITE 703
350 SPARKS STREET
OTTAWA, ONTARIO
CANADA K1R 7S8

Rear Admiral R. W. TIMBRELL, RCN, (Rtd)
President
Tel: (613) 232-3539 Telex 053-3522

June 5, 1979

Col. Melvyn D. Remus,
District Engineer,
U.S. Army Corps of Engineers,
P.O. Box 1027,
Detroit, MI 48231

Dear Colonel Remus:

Our members have asked me to convey to you the formal request that the Soo Lock be kept open to allow passage for as long as is feasible during the coming winter.

In general, the plans of DMA members call for the same kind of late season activity we conducted last year. Generally speaking this involves shipments of tanker-carried products, mainly petroleum products and caustic soda, from the Sarnia-Windsor area to Canadian destinations on Lake Superior. There will also be shipments of steel products from Lake Superior to the Windsor-Detroit area, mainly for the automotive industry, as well as westbound cargoes of iron ore and coal destined for Lake Superior.

We will be able to be more specific as to the scheduling of shipments a few months from now when meetings of the Ice Committee are convened by Lake Carriers' Association in Cleveland.

Yours very truly,

(Rear Admiral R.W. Timbrell)
President

APPENDIX B

CLOSING AND OPENING DATES AT THE SOO LOCKS

APPENDIX B

Closing and Opening Dates at the Soo Locks
1925 - 1978

Year	Date of Opening Canal	Date of Closing Canal
1925	Apr 8	Dec 17
1926	Apr 29	Dec 18
1927	Apr 12	
1928	May 1	Dec 16
1929	Apr 13	Dec 14
1930	Apr 21	Dec 15
1931	Apr 10	
1932	Apr 17	Dec 16
1933	Apr 19	Dec 14
1934	Apr 29	Dec 15
1935	Apr 16	Dec 16
1936	Apr 28	Dec 17
1937	Apr 8	Dec 15
1938	Apr 12	Dec 16
1939	Apr 26	Dec 15
1940	Apr 11	Dec 15
1941	Apr 1	
1942	Mar 22	Dec 17
1943	Apr 19	Dec 15
1944	Mar 31	Jan 14, 1945
1945	Mar 25	Dec 15
1946	Mar 25	Dec 17
1947	Apr 10	Dec 15
1948	Apr 2	Dec 16
1949	Mar 22	Dec 15
1950	Mar 21	Dec 15
1951	Apr 2	Dec 16
[illegible]	Mar 30	Dec 19
[illegible]	Mar 21	Dec 15
	Apr 10	Dec 16
	Apr 8	Dec 16
	[illegible]	Dec 21
	[illegible]	Dec 17
		Dec 16
		Dec 21

Closing and Opening Dates at the Soo Locks
1925 - 1978 (Continued)

Year	Date of Opening Canal	Date of Closing Canal
1960	Apr 7	Dec 19
1961	Apr 8	Dec 18
1962	Apr 12	Dec 19
1963	Apr 10	Dec 20
1964	Apr 1	Dec 16
1965	Apr 14	Dec 18
1966	Apr 1	Dec 20
1967	Apr 7	Dec 31
1968	Apr 2	Jan 4, 1969
1969		Jan 11, 1970
1970		Jan 29, 1971
1971		Feb 1, 1972
1972		Feb 8, 1973
1973		Feb 7, 1974
1974	All Year	
1975	All Year	
1976	* All Year	
1977	All Year	
1978	All Year	

*During the winter of 1977-1978, the locks were kept operational and open to all arriving vessels. However, for a few weeks, ice conditions become so severe that only vessels on emergency missions carrying essential fuel oil reached the locks.

APPENDIX C

POTENTIAL EROSION SITES

SOURCE: Wuebben, J.L. et. al. "Preliminary Draft - Assessment of Shoreline Areas Potentially Impacted During Winter Navigation," USA CRREL, February 1978.

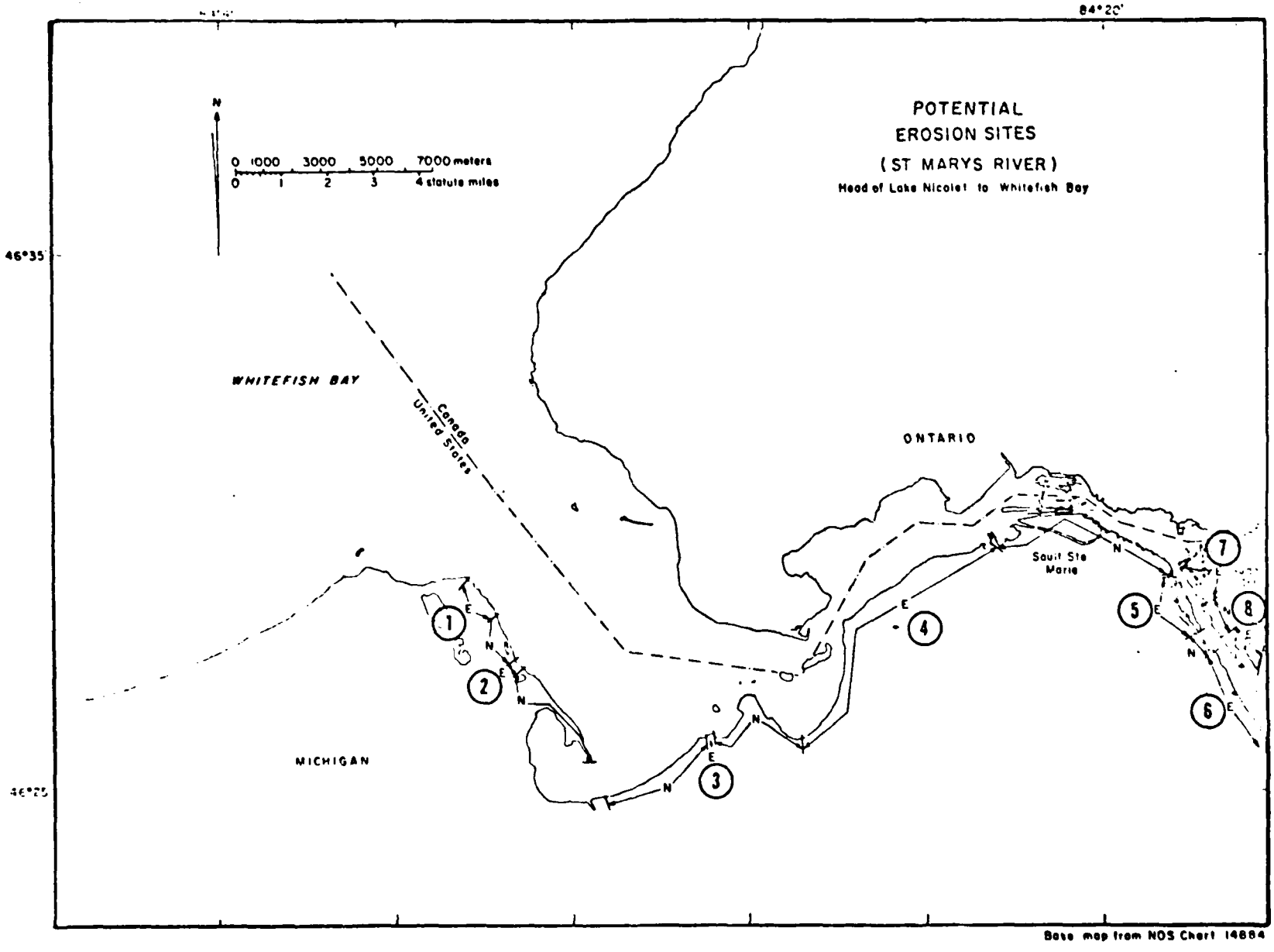


FIGURE C-1. POTENTIAL EROISION SITES, ST. MARYS RIVER — AS OBSERVED DURING A 25, 26 MAY 1977 BOAT SURVEY

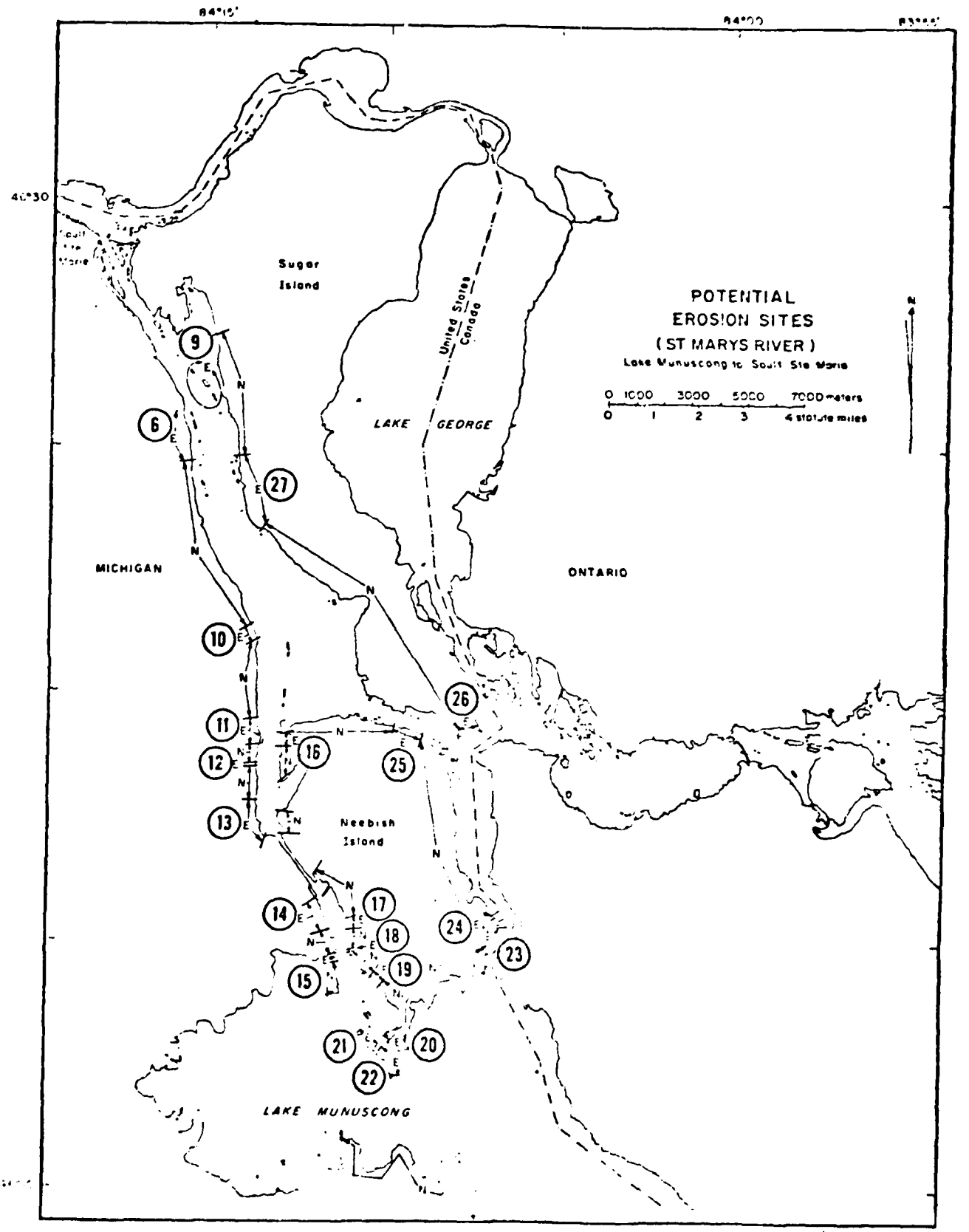


FIGURE C-1 (Con't).

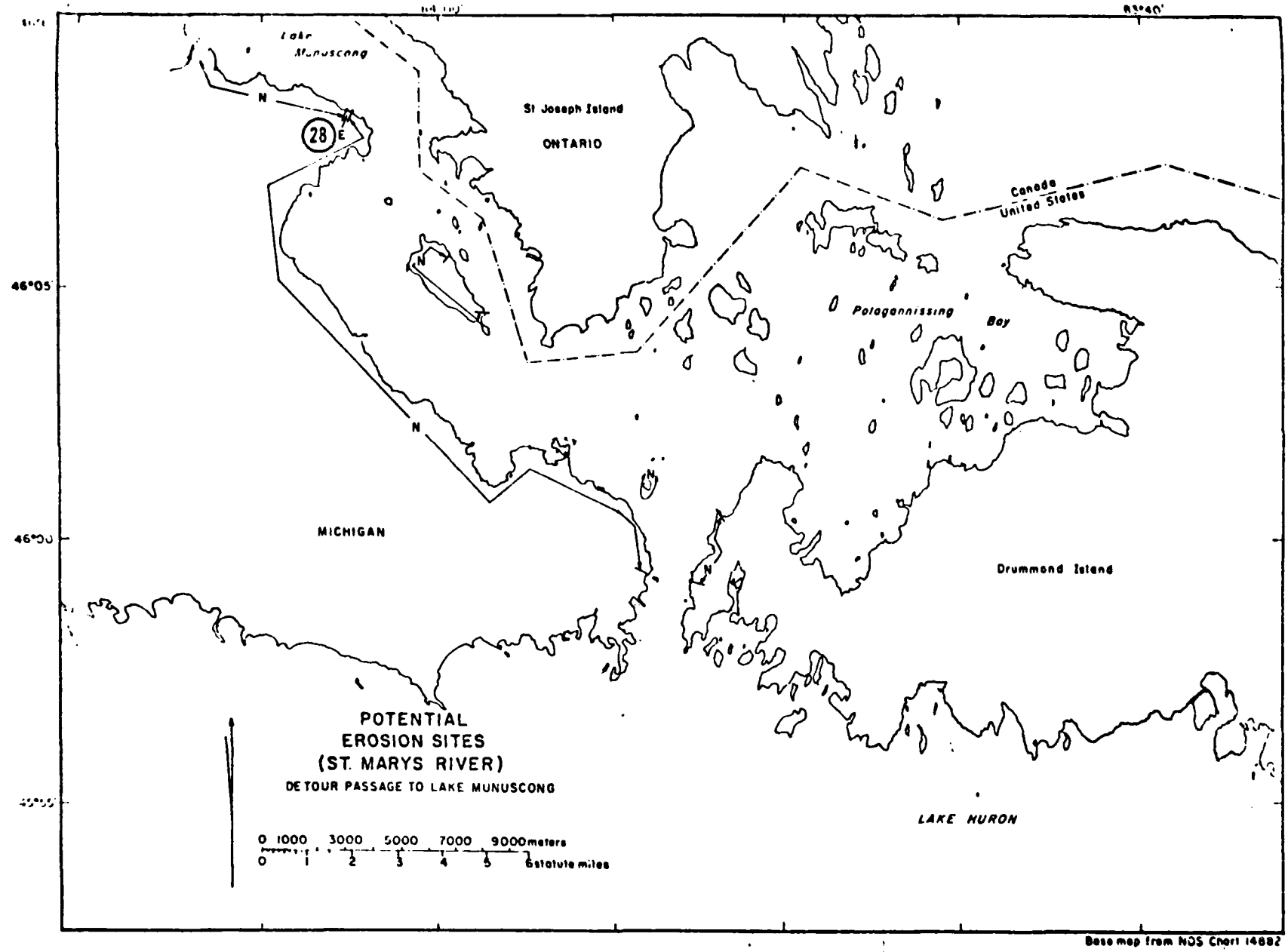


FIGURE C-1 (Con't).

TABLE C-1 SITES OF POTENTIAL EROSION DUE TO NATURAL CAUSES AND TO SHIP INDUCED PROCESSES OF YEAR-ROUND NAVIGATION

Site No.	Approximate Length, ft. (Revised from May '77 estimates)
4	4000 (scattered)
5	5600
6	3900 (scattered)
7	4600
8	1300
9	2500
11	800
16	1000
23	400
24	200
25	400
27	800
	25500 (4.8 miles)

The U.S. Department of the Interior-Office of the Secretary has identified five Land and Water Conservation Fund projects and one surplus property located along the St. Marys River which could be affected by increased erosion as a result of the proposed action. Included are projects 26-00139.Sherman Park; 26-00141, Mission Road Park; and 26-00979,Sault Ste. Marie; project 26-00241, Campground Development, Brimley State Park, administered by the Michigan Department of Natural Resources; and project 26-00959, Bay Mills Recreation Area, administered by the Bay Mills Indian Community.

APPENDIX D

COMMERCE

TABLE D-1
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1978

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Pulpwood, woodpulp, paper	---	81,706	81,706	62,067
Vegetable Products				
Wheat	---	17,400,565	17,400,565	13,910,478
Barley	---	3,330,079	3,330,079	3,305,600
Oats	---	488,404	488,404	638,555
Corn	13,784	1,552,836	1,566,620	243,516
Rye	---	99,651	99,651	164,084
Flaxseed	---	267,360	267,360	172,668
Sunflower seed	---	1,287,992	1,287,992	250,355
Flour	---	---	---	2,045
Mill products, screenings	4,806	729,412	734,218	613,863
Mineral Products				
Iron ore	177,939	67,699,011	67,876,950	54,502,557
Mfd iron, steel and pig iron	34,621	257,402	292,023	283,479
Scrap iron	---	135,364	135,364	81,205
*Stone	2,017,111	---	2,017,111	1,757,590
Cement	807,191	---	807,191	605,692
Coal	4,767,354	2,846,164	7,613,518	7,893,735
Nonmetallic minerals, mfrs.	227,736	---	227,736	179,564
Petroleum Products				
Gasoline	252,480	93,561	346,041	373,432
Fuel oil	899,087	47,031	946,118	705,135
Miscellaneous merchandise	671,002	575,591	1,246,593	1,134,175

Summary

Vessel passages	Number	7,766	5,695	13,461	11,734
Passengers	Number	182,282	6,037	188,319	189,787
Freight	Short tons	9,873,111	96,892,129	106,765,240	86,879,759

*Includes broken stone, gravel, and sand.

TABLE D-2
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1977

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Pulpwood, woodpulp, paper	750	823,330	83,080	44,618
Vegetable Products				
Wheat	---	15,005,593	15,005,593	12,688,508
Barley		3,424,743	3,424,743	2,961,331
Oats	---	677,949	677,949	600,882
Corn	---	110,805	110,805	551,956
Rye	---	128,479	128,479	225,753
Flaxseed	---	214,408	214,408	161,787
Sunflower seed	---	537,509	537,509	71,185
Flour	2,055	---	2,055	4,219
Mill products, screenings	---	552,502	552,502	670,305
Mineral Products				
Iron ore	183,409	43,137,227	43,320,636	64,693,365
Mfd iron, steel and pig iron	88,669	216,459	305,128	294,363
Scrap iron	9,426	60,713	70,139	67,983
*Stone	1,873,071	---	1,873,071	1,782,814
Cement	648,638	---	648,638	589,019
Coal	4,861,191	3,661,055	8,522,246	7,148,670
Nonmetallic minerals, mfrs.	113,303	---	113,303	202,852
Petroleum Products				
Gasoline	343,483	98,335	431,823	350,133
Fuel oil	805,913	74,032	879,945	655,000
Miscellaneous merchandise	639,531	586,025	1,225,556	1,024,118
Summary				
Vessel passages Number	6,574	4,485	11,059	12,421
Passengers Number	174,479	8,621	183,100	189,012
Freight Short tons	9,569,444	68,558,164	78,127,608	94,789,364

*Includes broken stone, gravel, and sand.

TABLE D-3
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1976

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Pulpwood, woodpulp, paper	---	64,423	64,423	40,095
Vegetable Products				
Wheat	---	11,933,164	11,933,164	13,464,961
Barley	---	3,681,345	3,681,345	2,997,554
Oats	---	688,618	688,618	698,555
Corn	---	374,355	374,355	892,641
Rye	---	137,416	137,416	438,130
Flaxseed	---	140,072	140,072	208,008
Sunflower seed	---	213,555	213,555	---
Flour	---	---	---	5,640
Mill products, screenings	---	557,477	557,477	863,129
Mineral Products				
Iron ore	800	60,113,049	60,113,849	70,380,609
Mfd iron, steel and pig iron	29,545	298,302	327,847	254,900
Scrap iron	3,304	78,225	81,529	107,520
*Stone	1,702,966	19,472	1,722,438	1,814,862
Cement	599,604	---	599,604	549,481
Coal	5,515,460	2,515,738	8,031,193	6,511,719
Nonmetallic minerals, mfrs.	268,111	---	268,111	169,374
Petroleum Products				
Gasoline	324,682	42,348	367,030	326,514
Fuel oil	555,779	15,669	571,448	654,975
Miscellaneous merchandise	605,538	513,349	1,118,887	976,004

Summary

Vessel passages	Number	7,066	4,919	11,985	13,090
Passengers	Number	188,402	5,298	193,700	188,176
Freight	Short tons	9,605,789	81,386,577	90,992,366	101,354,671

*Includes broken stone, gravel, and sand.

TABLE D-4
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1975

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Paper and woodpulp	3,360	30,586	33,946	26,028
Pulpwood, lumber and logs	1,242	3,510	4,752	15,590
Vegetable Products				
Wheat	9,000	14,783,676	14,792,676	13,201,834
Barley	---	2,810,713	2,810,713	3,714,866
Oats	---	549,097	549,097	705,961
Corn	16,759	228,630	245,389	1,008,287
Rye	---	226,356	226,356	461,003
Flaxseed	---	163,525	163,525	319,526
Soy	---	9,240	9,240	129,212
Flour	---	4,079	4,079	22,598
Mill products, screenings	1,500	720,870	722,370	975,960
Mineral Products				
Iron ore	---	60,073,186	60,073,186	72,095,115
Manufactured iron and steel	77,630	139,832	217,462	303,344
Pig iron	---	---	---	12,686
Scrap iron	11,113	80,833	91,946	120,681
*Stone	1,676,261	1,000	1,677,261	1,664,123
Cement	568,833	---	568,833	552,323
Coal	5,076,466	2,051,294	7,127,760	5,795,430
Nonmetallic minerals, mfrs.	157,277	---	157,277	177,111
Petroleum Products				
Gasoline	284,134	37,308	321,442	322,751
Fuel oil	635,180	28,832	664,012	629,549
Miscellaneous merchandise	691,422	366,660	1,058,082	943,482

Summary

Vessel passages	Number	7,047	5,111	12,158	13,297
Passengers	Number	177,481	15,080	192,561	189,215
Freight	Short tons	9,210,177	82,309,227	91,519,404	103,197,460

*Includes broken stone, gravel, and sand.

TABLE D-5
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1974

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Paper and woodpulp	---	13,059	13,059	39,811
Pulpwood, lumber and logs	---	17,674	17,674	9,862
Vegetable Products				
Wheat	9,150	11,330,535	11,339,685	13,569,196
Barley	---	2,391,936	2,391,936	4,411,467
Oats	---	564,930	564,930	680,452
Corn	3,808	1,032,316	1,036,124	985,765
Rye	---	313,487	313,487	450,482
Flaxseed	---	181,765	181,765	405,814
Soy	---	106,664	106,664	266,817
Flour	4,245	4,332	8,577	21,415
Mill products, screenings	---	615,163	615,163	1,077,739
Mineral Products				
Iron ore	23,660	73,869,408	73,893,068	67,953,786
Manufactured iron and steel	130,869	207,777	338,646	284,807
Pig iron	634	---	634	21,959
Scrap iron	---	30,474	30,474	137,606
*Stone	1,947,742	1,000	1,948,742	1,530,494
Cement	598,621	---	598,621	508,438
Coal	5,254,808	1,032,243	6,287,051	5,361,068
Nonmetallic minerals, mfrs.	183,168	---	183,168	193,056
Petroleum Products				
Gasoline	310,289	51,639	361,928	286,384
Fuel oil	686,209	43,332	729,541	591,540
Miscellaneous merchandise	613,059	282,326	895,385	952,732

Summary

Vessel passages	Number	7,585	5,535	13,120	13,181
Passengers	Number	172,638	8,137	180,775	198,280
Freight	Short tons	9,766,262	92,090,060	101,856,322	99,740,690

*Includes broken stone, gravel, and sand.

TABLE D-6

STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1973

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Paper and woodpulp	---	25,254	25,254	55,835
Pulpwood, lumber and logs	---	25,601	25,601	1,344
Vegetable Products				
Wheat	1,650	14,260,871	14,262,521	12,640,128
Barley	---	3,790,013	3,790,013	4,704,915
Oats	620	981,019	981,639	659,270
Corn	4,189	1,392,222	1,396,411	779,797
Rye	---	774,548	774,548	231,162
Flaxseed	---	278,734	278,734	440,303
Soy	10,026	167,182	177,208	318,217
Flour	---	4,265	4,265	23,294
Mill products, screenings	---	958,743	958,743	953,764
Mineral Products				
Iron ore	---	77,175,574	77,175,574	65,369,312
Manufactured iron and steel	73,187	129,936	203,123	322,146
Pig iron	4,834	---	4,834	22,886
Scrap iron	---	200,140	200,140	140,222
*Stone	1,818,584	---	1,818,584	1,484,264
Cement	480,990	---	480,990	509,936
Coal	5,989,018	131,329	6,120,347	5,561,324
Nonmetallic minerals, mfrs.	167,677	---	167,677	207,621
Petroleum Products				
Gasoline	273,448	22,724	296,172	260,313
Fuel oil	496,155	75,217	571,372	570,482
Miscellaneous merchandise	651,297	323,247	974,544	928,264

Summary

Vessel passages	Number	7,800	6,191	13,991	13,054
Passengers	Number	179,046	12,145	191,191	201,961
Freight	Short tons	9,971,675	100,716,619	110,688,294	96,194,799

*Includes broken stone, gravel, and sand.

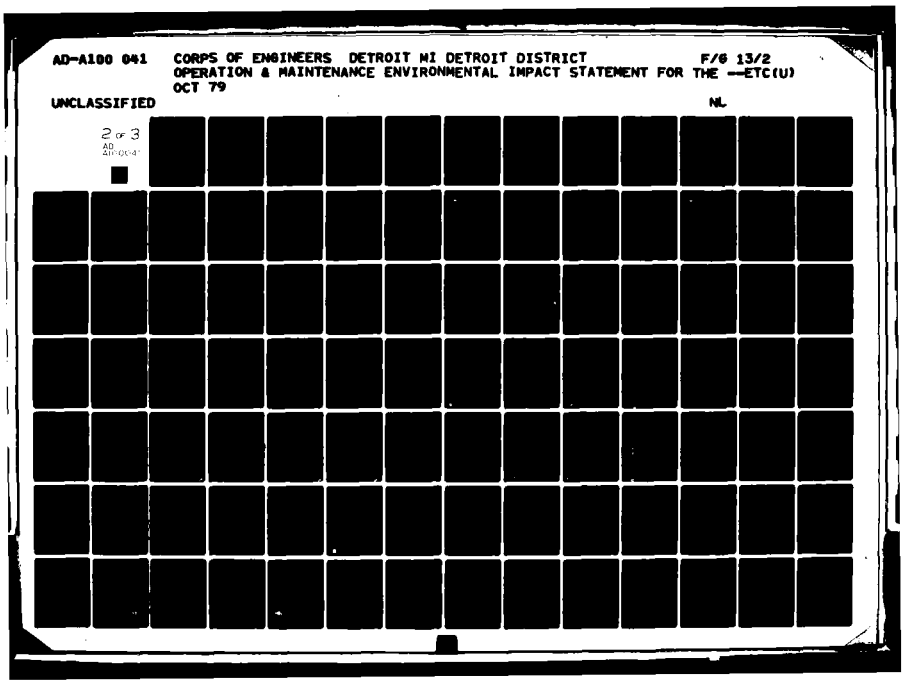

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TABLE D-7
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1972

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Paper and woodpulp	---	39,771	39,771	61,048
Pulpwood, lumber and logs	---	3,496	3,496	214
Vegetable Products				
Wheat	---	14,003,295	14,003,295	10,620,082
Barley	---	4,962,650	4,962,650	3,555,710
Oats	---	571,313	571,313	609,070
Corn	13,365	578,960	592,325	789,765
Rye	---	294,975	294,975	163,128
Flaxseed	---	498,080	498,080	425,401
Soy	4,071	99,693	103,764	336,493
Flour	15,820	39,133	54,953	12,815
Mill products, screenings	29,516	1,324,457	1,353,973	654,001
Mineral Products				
Iron ore	---	65,216,702	65,216,702	68,490,961
Manufactured iron and steel	195,056	173,206	368,262	296,730
Pig iron	---	32,591	32,591	33,572
Scrap iron	1,480	129,949	131,429	172,327
*Stone	1,222,443	2,600	1,225,043	1,542,134
Cement	577,357	---	577,357	439,182
Coal	4,968,741	10,151	4,978,892	6,086,468
Nonmetallic minerals, mfrs.	180,489	---	180,489	227,609
Petroleum Products				
Gasoline	287,975	22,178	310,153	238,683
Fuel oil	530,923	56,810	587,733	537,705
Miscellaneous merchandise	465,233	495,283	960,516	912,161

Summary

Vessel passages	Number	7,180	5,600	12,780	13,292
Passengers	Number	181,556	14,123	195,679	200,635
Freight	Short tons	8,492,469	88,555,293	97,047,762	96,205,259

*Includes broken stone, gravel, and sand.

TABLE D-8
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1971

Items	Westbound	Eastbound	Total	Season Average Prev 3 Years
Wood Products				
Paper and woodpulp	---	54,407	54,407	73,708
Pulpwood, lumber, and logs	---	490	490	14,789
Vegetable Products				
Wheat	1,680	12,440,092	12,441,772	9,283,145
Barley	---	4,481,737	4,481,737	2,402,141
Oats	---	488,404	488,404	602,098
Corn	4,758	963,800	968,558	626,176
Rye	---	281,922	281,922	108,363
Flaxseed	---	440,629	440,629	405,873
Soy	---	519,480	519,480	210,420
Flour	2,205	2,822	5,027	19,993
Mill products, screenings	3,436	917,064	920,500	444,686
Mineral Products				
Iron ore	29,779	61,439,304	61,469,083	69,895,114
Manufactured iron and steel	133,031	150,006	283,037	367,086
Pig iron	5,004	23,447	28,451	67,688
Scrap iron	1,109	80,140	81,249	181,038
*Stone	1,547,855	---	1,547,855	1,538,654
Cement	466,967	---	466,967	404,520
Coal	4,964,908	19,058	4,983,966	6,659,219
Nonmetallic minerals, mfrs.	231,001	---	231,001	232,144
Petroleum Products				
Gasoline	221,427	31,399	252,826	236,326
Fuel oil	543,747	71,768	615,515	464,574
Miscellaneous merchandise	310,429	612,708	923,137	909,780

Summary

Vessel passages	Number	7,224	5,548	12,772	13,602
Passengers	Number	194,567	13,404	207,971	197,758
Freight	Short tons	8,467,336	83,018,677	91,486,013	95,147,535

*Includes broken stone, gravel, and sand.

TABLE D-9
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1970

Items	Westbound	Eastbound	Total
Wood Products			
Paper and woodpulp	---	73,326	73,326
Pulpwood, lumber and logs	---	45	45
Vegetable Products			
Wheat	---	11,475,317	11,475,317
Barley	---	4,670,358	4,670,358
Oats	---	918,094	918,094
Corn	---	778,507	778,507
Rye	---	116,589	116,589
Flaxseed	---	382,199	382,199
Soy	---	331,407	331,407
Flour	5,376	4,527	9,903
Mill products, screenings	---	586,819	586,819
Mineral Products			
Iron ore	2,650	69,419,502	69,422,152
Manufactured iron and steel	144,503	200,637	345,140
Pig iron	---	7,616	7,616
Scrap iron	14,500	193,487	207,987
*Stone	1,679,893	---	1,679,893
Cement	485,483	---	485,483
Coal	6,275,056	446,058	6,721,114
Nonmetallic minerals, mfrs.	211,374	---	211,374
Petroleum Products			
Gasoline	184,590	33,369	217,959
Fuel oil	463,919	44,279	508,198
Miscellaneous merchandise	354,118	547,022	901,140

Summary

Vessel passages	Number	7,495	6,116	13,611
Passengers	Number	179,648	222,586	202,234
Freight	Short tons	9,821,462	90,229,158	100,050,620

*Includes broken stone, gravel and sand.

TABLE D-10

STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1969

Items	Westbound	Eastbound	Total
Wood Products			
Paper and woodpulp	---	55,412	55,412
Pulpwood, lumber and logs	---	106	106
Vegetable Products			
Wheat	---	7,943,157	7,943,157
Barley	---	1,515,034	1,515,034
Oats	---	420,711	420,711
Corn	---	622,229	622,229
Rye	---	90,874	90,874
Flaxseed	---	453,374	453,374
Soy	---	158,591	158,591
Flour	---	23,515	23,515
Mill products, screenings	12,024	442,661	454,685
Mineral Products			
Iron ore	2,000	74,579,648	74,581,648
Manufactured iron and steel	156,450	105,563	262,013
Pig iron	3,676	60,973	64,649
Scrap iron	10,708	217,038	227,746
*Stone	1,398,654	---	1,398,654
Cement	359,046	6,050	365,096
Coal	6,554,324	---	6,554,324
Nonmetallic minerals, mfrs.	240,453	---	240,453
Petroleum Products			
Gasoline	192,284	52,981	245,265
Fuel oil	427,819	61,584	489,403
Miscellaneous merchandise	376,856	535,351	912,207

Summary

Vessel passages	Number	7,495	5,999	13,494
Passengers	Number	176,044	15,655	191,699
Freight	Short tons	9,734,294	87,344,852	97,079,146

*Includes broken stone, gravel and sand.

TABLE D-11
STATISTICAL REPORT OF LAKE COMMERCE
PASSING THROUGH THE CANAL AT
SAULT STE. MARIE, MICHIGAN
FOR THE SEASON OF 1968

Items	Westbound	Eastbound	Total
Wood Products			
Paper and woodpulp	---	92,386	92,386
Pulpwood, lumber and logs	---	44,216	44,216
Vegetable Products			
Wheat	10,546	8,420,414	8,430,960
Barley	---	1,021,031	1,021,031
Oats	---	467,490	467,490
Corn	8,401	469,392	477,793
Rye	---	117,625	117,625
Flaxseed	---	382,047	382,047
Soy	4,228	137,035	141,263
Flour	---	26,562	26,562
Mill products, screenings	4,480	288,073	292,553
Mineral Products			
Iron ore	13,440	65,668,103	65,681,543
Manufactured iron and steel	200,145	293,960	494,105
Pig iron	16,243	114,556	130,799
Scrap iron	---	107,381	107,381
*Stone	1,523,474	13,940	1,537,414
Cement	362,980	---	362,980
Coal, bituminous	6,702,220	---	6,702,220
Coal, anthracite	---	---	---
Coke	2,081	---	2,081
Nonmetallic minerals, mfrs.	244,604	---	244,604
Petroleum Products			
Gasoline	188,810	56,944	245,754
Fuel oil	337,027	59,094	396,121
Other petroleum products	---	---	---
Motor vehicles	---	---	---
Miscellaneous merchandise	421,948	491,964	913,912

Summary

Vessel passages	Number	7,453	6,249	13,702
Passengers	Number	159,760	39,581	199,341
Freight	Short tons	10,040,627	78,272,213	88,312,840

*Includes broken stone, gravel and sand.

TABLE D-12. U.S. Traffic through Soo Locks-At Destination
15 December-15 January, 1978-79

Port	Departures	Tonnage	Arrivals	Tonnage	Commodity
Gary, IN			10	296,782	Taconite
Indiana Harbor, IN			7	196,050	Taconite
Burns Harbor, IN			7	246,559	Taconite
Buffalo, Ohio			1	13,674	Grain
Cleveland, Ohio			17	292,756	Taconite
Ashtabula, Ohio			7	192,507	Taconite
Conneaut, Ohio			9	262,562	Taconite
Lorain, Ohio			7	126,325	Taconite
Sandusky, Ohio	1	5,310			Coal
Detroit, MI			5	115,517	Taconite
Trenton, MI			1	13,256	Taconite
Dearborn, MI			8	132,379	Taconite
Calcite, MI	1	11,262			Limestone
Marquette, MI	10	205,771			Taconite
Chicago, IL			2	35,995	Taconite
Duluth, MN	16	337,817	2	16,572	Taconite/Coal Grain/Limestone
Two Harbors, MN	18	534,362			Taconite
Taconite Harbor, MN	4	113,615			Taconite
Superior, WI	22	556,373			Taconite
Silver Bay, WI	11	176,424			Taconite
	83	1,940,934	83	1,940,934	

TABLE D-13 Hazardous Materials Transiting Soo Locks in U.S. Vessels 17 December thru 31 March

Year	Cargo	Tonnage	Total
78-79	Fuel Oil/Gasoline	8,154/8,590	16,744
77-78	Fuel Oil	7,552	7,552
76-77	---	---	0
75-76	---	---	0
74-75	Fuel Oil/Gasoline	15,571/3,100	18,671
73-74	Fuel Oil	3,997	3,997
72-73	---	---	0
71-72	Fuel Oil/Gasoline	8,146/6,056	14,202
			61,166

TABLE D-14 Hazardous Materials Transiting Soo Locks in Canadian Vessels 17 December thru 31 March

Year	Cargo	Tonnage	Total Tons
78-79	Fuel Oil/Gasoline	127,581/37,724	165,305
77-78	Fuel Oil/Gasoline	77,495/70,407	147,902
76-77	Fuel Oil/Gasoline	46,487/12,333	58,820
75-76	Fuel Oil/Gasoline	12,397/ 2,773	15,170
74-75	---	---	0
73-74	Fuel Oil	5,340	5,340
72-73	Fuel Oil	8,885	8,885
71-72	Fuel Oil	2,539	2,539
			403,961

APPENDIX E

VESSEL MOVEMENTS

78-79 SEASON
VESSEL MOVEMENTS
15 Dec - 15 Jan Inclusive

Arr Date	Vessel Origin	Vessel Destination	Commodity	Tonnage
1/14	Two Harbors	Gary	Taconite	44,794
12/18	Marquette	Cleveland	Taconite	18,291
12/24	"	"	"	18,541
1/1	"	"	"	18,600
12/23	Superior	Indiana Harbor	Taconite	24,922
12/25	Superior	Detroit	Taconite	24,143
1/1	"	"	"	21,703
1/9	"	"	"	20,876
12/23	"	Cleveland	"	22,850
12/30	"	Detroit	"	19,893
1/10	Silver Bay	Cleveland	"	19,992
1/5	Superior	Dearborn	Taconite	16,382
12/19	Duluth	"	"	16,939
12/27	Superior	"	"	16,706
12/21	Duluth	"	"	18,845
12/28	Superior	"	"	18,999
12/20	"	"	"	16,467
12/26	Duluth	"	"	16,901
1/13	Two Harbors	"	"	11,140
				386,984
12/17	Superior	Chicago	Taconite	18,301
12/24	Silver Bay	Cleveland	"	17,596
12/20	Marquette	Ashtabula	"	24,905
12/26	"	"	"	25,137
12/27	Taconite Hbr	Trenton	"	13,256
12/18	Marquette	Ashtabula	"	27,031
12/23	"	"	"	26,534
12/29	"	"	"	20,130
12/18	Silver Bay	Cleveland	"	12,558
12/17	Marquette	"	"	10,993
12/17	Silver Bay	"	"	10,998
12/18	"	"	"	13,348
12/16	"	"	"	13,138
				233,925

Arr Date	Vessel Origin	Vessel Destination	Commodity	Tonnage
12-26-78	Duluth	Conneaut	Taconite	24,240
12-18-78	Duluth	Conneaut	Orepellets	25,000
12-15-78	Silver Bay	Lorain	Taconite	17,676
12-16-78	Duluth	Ashtabula	Pellets	15,568
12-17-78	Silver Bay	Indiana Hbr	Taconite	21,780
12-25-78	Silver Bay	Indiana Hbr	Taconite	21,770
1-2-79	Two Harbors	Indiana Hbr	Taconite	20,068
1-3-79	Marquette	Cleveland	Taconite	15,609
				161,711
12-16-78	Two Harbors	Gary	Iron Ore	40,822
12-23-78	Two Harbors	Gary	Iron Ore	40,624
12-29-78	Two Harbors	Gary	Iron Ore	44,240
12-16-78	Duluth	Lorain	Iron Ore	18,088
12-23-78	Duluth	Conneaut	Iron Ore	18,180
12-17-78	Two Harbors	Lorain	Iron Ore	17,746
12-23-78	Two Harbors	Lorain	Iron Ore	18,469
12-15-78	Duluth	Gary	Ore	24,721
12-19-78	Duluth	Conneaut	Ore	42,536
12-26-78	Duluth	Gary	Ore	25,187
12-16-78	Duluth	Lorain	Iron Ore	18,751
12-23-78	Two Harbors	Gary	Iron Ore	18,130
12-12-78	Two Harbors	Gary	Iron Ore	15,504
12-15-78	Sandusky	Duluth	Coal	5,310
12-15-78	Duluth	Lorain	Taconite	17,954
12-21-78	Duluth	Lorain	Pellets	17,641
12-30-78	Two Harbors	Conneaut	Pellets	18,123
12-18-78	Calcite	Duluth	Limestone	11,262
1-7-79	Two Harbors	Conneaut	Ore	38,958
1-9-79	Two Harbors	Gary	Ore	18,394
1-8-79	Two Harbors	South Chicago	Pellets	17,694
1-3-79	Duluth	Conneaut	Iron Ore	23,592
1-7-79	Two Harbors	Gary	Iron Ore	24,366
				536,292
			Limestone	11,262
			Coal	5,310

Arr Date	Vessel Origin	Vessel Destination	Commodity	Tonnage
12/27	Superior	Burns Harbor	Taconite	56,950
12/31	"	"	"	41,799
1/2	"	"	"	19,409
12/21	"	"	"	29,224
12/23	"	"	"	21,199
12/17	Superior	Detroit	Taconite	28,902
12/15	Taconite Harbor	Cleveland	"	28,426
12/25	Duluth	Buffalo	Grain	13,674
12/17	Two Harbors	Ind Hbr	Taconite	53,419
12/23	"	Ashtabula	"	53,202
12/29	"	Ind Hbr	"	38,669
1/8	Taconite Hbr	Conneaut	"	34,319
1/6	"	"	"	37,614
1/16	Silver Bay	Ind Hbr	"	15,422
12/19	Superior	Cleveland	Taconite	21,250
12/28	"	"	"	19,719
1/7	"	"	"	18,701
				531,898
			Grain	[13,674]

APPENDIX F

CULTURAL AND HISTORIC RESOURCES CORRESPONDENCE

MICHIGAN DEPARTMENT OF STATE
RICHARD H. AUSTIN SECRETARY OF STATE

LANSING
MICHIGAN 48918

MICHIGAN HISTORY DIVISION
ADMINISTRATION, ARCHIVES, HISTORIC SITES, AND PUBLICATIONS
[illegible] N. Logan Street
517 373[illegible]
STATE MUSEUM
505 N. Washington Avenue
517 373 0515

September 7, 1979

Re: ER-1458 (MiD)
Draft Supplement to the Operation and Maintenance EIS for the Federal Facilities at Sault Ste. Marie, Michigan, Addressing Limited Season Extension of Operation

U. S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources Branch
P. O. Box 1027
Detroit, Michigan 48231

Dear Sir:

Our staff has reviewed this project and concludes that it will have no effect on cultural resources.

If you have further questions, please contact Dr. John R. Halsey, Environmental Review Coordinator for the Michigan History Division.

Thank you for giving us the opportunity to comment.

Sincerely,

Martha M. Bigelow
Director, Michigan History Division
and
State Historic Preservation Officer

By: Michael J. Washo
Deputy State Historic Preservation Officer

MJW/JRH:tj

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

June 2, 1977

U.S. Army Engineer District, Detroit
ATTN: Chief, Environmental Resources Branch, Judy McLaine
P.O. Box 1027
Detroit, Michigan 48231

Dear Ms. McLaine:

Thank you for your request for comments on the environmental statement for the operations and maintenance of the Federal Navigation and Power Generator facilities at Sault Ste Marie, Michigan. Pursuant to our responsibilities under Section 102(2)(c) of the National Environmental Policy Act of 1969 and the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800), we have determined that your draft environmental statement appears adequate concerning our area of interest, and we have no further comments to make.

Sincerely yours,

Myra F. Harrison

Myra F. Harrison
Acting Director, Office of
Review and Compliance

APPENDIX G

PROPOSED MONITORING STUDIES

APPENDIX G

PROPOSED MONITORING STUDIES
UNDER THE SELECTED PLAN

Evaluation of Benthic Dislocation Due to Ship-Induced Waves Caused by Vessel Passage in the St. Marys Riber (Continuation Study)

Fffects of Ship-Induced Waves in an Ice Environment on the St. Marys River Ecosystem (Continuation Study)[1]

Effects of Winter Navigation on Waterfowl and Raptorial Birds in the St. Marys River Area (Continuation Study)[2]

Evaluation of Lake Whitefish and Herring Spawning Grounds as they may be Affected by Excessive Sedimentation Induced by Vessel Entrapment Due to the Ice Environment Within the St. Marys River System[1, 2]

Effects of Winter Navigation on Migration and Dispersal of Land Mammals in the Eastern Lake Superior and the St. Marys River Area[3]

River Current Study for Prediction of Oil/Hazardous Material Spill Distribution[2]

Additional Studies may be added as coordianted with the various Federal, State and local agencies

[1]Due to the length of time necessary for preparing and coordinating adequate scopes of work, some of this effort may not be undertaken until winter of 1980-81
[2]Contract under negotiation
[3]Contract has been awarded

APPENDIX H

ENDANGERED/THREATENED SPECIES COORDINATION

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1027
DETROIT, MICHIGAN 48231

NCFED-ER

Mr. Charles Rughlett
Acting Regional Director
U.S. Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, MN 55111

17 MAY 1979

Dear Mr. Rughlett:

Pursuant to Section 7 of the Endangered Species Act of 1973, I am requesting formal consultation regarding the potential impact of extending lock operations, at Sault Ste. Marie, Michigan from 15 December to a maximum of 15 January, on wintering bald eagles on the St. Marys River.

Environmental studies conducted for the Extended Navigation Season Demonstration Program have identified wintering bald eagles on the St. Marys River, in the vicinity of Sugar Island.

A Draft, and Final Supplement to the Final Environmental Statement for Operation, Maintenance, and Minor Improvement of the Federal Facilities at Sault Ste. Marie, Michigan, 1977, would be prepared to address the potential impacts of extending lock operations beyond 15 December. Our current schedule requires the draft supplement to be filed no later than 15 June 1979. Therefore, I would like to complete formal consultation at least 2 weeks prior to that date. For this reason, I would appreciate your early response.

Sincerely,

signed

MELVIN D. [illegible]
Colonel, Corps of Engineers
District Engineer

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

IN REPLY REFER TO:
AFA-SE

JUN 2 6 1979

Colonel Melvyn D. Remus
District Engineer
U. S. Army Engineer District
Detroit
P. O. Box 1027
Detroit, MI 48231

Dear Colonel Remus:

In reference to your request concerning the potential impact on the bald eagle of extending lock operations at Sault Ste. Marie, Michigan from December 15 to January 15, we offer the following information. Based on knowledge currently available, the following threatened (T), endangered (E), or proposed (P) species that may be found within the project area are:

Common Name	Scientific Name	Habitat
Gray wolf*	(Canis lupus)	Winter migrant
American Peregrine Falcon (E)	(Falco peregrinus anatum)	Migratory
Arctic Peregrine Falcon (E)	(Falco peregrinus tundrius)	Migratory
Bald Eagle (T)	(Haliaeetus leucocephalus)	Migratory & Breeding

*Threatened in MN, Endangered in IL, IN, MI, OH, WI.

No critical habitat has been designated in this area at this time.

In accordance with the Endangered Species Act of 1973, as amended, the Federal Agency responsible for actions authorized, funded, or carried out in furtherance of the project, is required to conduct a biological assessment for the purpose of identifying endangered, threatened, or proposed species likely to be affected by the action. If the biological assessment indicates the presence of such species, the formal consultation process should be initiated. This can be done by writing to the Regional Director, U. S. Fish and Wildlife Service, at this address.

Biological assessments shall include: (1) the results of the comprehensive survey of the area; (2) the results of any studies undertaken to determine the nature and extent of any impacts on the identified species; (3) the agency's consideration of cumulative effects on the species or its critical habitat; (4) the study methods used; (5) difficulties encountered in obtaining data and completing the proposed study; (6) conclusions of the agency including recommendations as to further studies; and (7) any other relevant information.

The environmental studies conducted in conjunction with the "Survey Study for Great Lakes and St. Lawrence Seaway Navigation Season Extension - Draft Main Report and Environmental Statement," do address endangered species. However, no specific studies were mentioned in the report that were designed to determine the effects of lock operation and extended navigation on the bald eagle (both wintering and breeding) gray wolf, or the Arctic or American peregrine falcons. If data are available on these species please forward it to this office for evaluation along with the other requirements of the biological assessment as stated above.

This letter provides comment only on the endangered species aspect of the project. Our comments on other aspects of the project, possibly including recommendations to reduce or eliminate the project's damage to fish and wildlife resources, will be sent under separate cover.

If there are any questions regarding the biological assessment or how it applies to the consultation process, please contact the Region 3 Endangered Species Office at 725-3596.

Sincerely yours,

Charles A. Hughlett

Charles A. Hughlett
Acting Regional Director

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1027
DETROIT, MICHIGAN 48231

24 JUL 1979

NCEED-ER

Mr. Merryll Daily
U.S. Dept. of the Interior
Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, MN

Dear Mr. Daily:

As requested in the 26 June 1979 letter sent to us by Charles Puchlett, in accordance with his request, and in compliance with Section 7 of the 1973 Endangered Species Act (as amended, 1978), inclosed are two reports from studies done recently for the Corps on the bald eagle. These biological assessments include the seven criteria listed in the 26 June letter. Another assessment of the area, dealing with the bald eagle, can be found in "Environmental Assessment of the FY 1979 Winter Navigation Demonstration on the St. Lawrence River -- Technical Reports Volume I, Technical Report F: Bird Studies During the Winter of 1978." This study done by George P. Maxwell II and Gerald A. Smith discusses the presence, behavior, and possible effects of winter navigation on the bald eagle. Inclosed, also, is a copy of the Michigan DNR - "Michigan Mid-Winter Bald Eagle Survey" which shows nest sites and winter observations of the eagles.

No studies have been completed on the gray wolf. However, preliminary biological research done by Dr. William L. Robinson identified a few gray wolves along Whitefish Bay and the St. Marys River in past years, but there have been no recent sightings. Dr. Robinson and Dr. Roy E. Heath, Northern Michigan University, are currently working on a project to determine the effect of winter navigation on migration and dispersal of land mammals (including the gray wolf) in the eastern Lake Superior and the St. Marys River areas. The final report is due November 1980. Inclosed is a copy of the study proposal.

Dr. Durwood Allen of Purdue University has researched the wolves of northern Minnesota, Michigan, and especially Isle Royale. In a recent conversation with Dr. Allen, he stated that the Upper Peninsula of Michigan did provide favorable habitat for the gray wolf, but due partially to a coyote bounty, there are no known resident breeding pairs in the area. He also stated that there have been sporadic crossings by wolves from Ontario to Michigan.

24 JUL 1979

NCED-ER
Mr. Perryll Baily

The American peregrine falcon and the arctic peregrine falcon, both listed as endangered species in the Great Lakes Basin, only migrate through this area. Since there are no known nest sites in the Great Lakes Basin, the winter navigation project proposed should have no affect on these particular birds.

To facilitate the meeting of our schedules on this document, we would appreciate you providing us a review within 10 days if possible.

Sincerely,

[illegible]
Chief, Engineering Division

4 incl
as stated

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

IN REPLY REFER TO:
AFA-SE

Colonel Melvyn D. Remus
District Engineer
U. S. Army Engineer District
Detroit
P. O. Box 1027
Detroit, Michigan 48231

Dear Colonel Remus:

In reference to July 24, 1979 correspondence from P. McCallister, Chief, Engineering Division, of your staff, we offer the following information and recommendations.

On May 17, 1979 you requested initiation of formal consultations on the potential impact of extending lock operations at Sault Ste. Marie, Michigan, from December 15 to January 15. You specifically addressed the threatened bald eagle (Haliaeetus leucocephalus) and did not consider the impact of your proposed action on other endangered or threatened species.

On June 22, 1979 you were provided a list of federally listed species that might be found in your project area and a request for a biological assessment to identify the status of such species.

On July 3 Ms. Jody Years of your staff called this office requesting further information on the biological assessment and informed us a number of studies had been conducted on the bald eagle in the St. Mary's River. We requested copies of these studies to review before issuing a biological opinion.

On July 24 we received copies of two reports on eagle studies; one conducted in the lower St. Lawrence River and the other in the St. Mary's River area. This second study, conducted by William Robinson and Ronald Jensen, Northern Michigan University, began on January 11, 1979, which only covers the last five days of the subject lock extension period. The study appears to be primarily designed to assess some potential effects of winter navigation on waterfowl but did, however, document that two adult bald eagles inhabited the study area during their January 11 - April 30 observations.

In their opinion, "shipping in the St. Mary's River had no positive impact on these two eagles and may have had a minor negative impact by causing the eagles to shy away from the vicinity of ship traffic at distances up to 1/2 mile."

Michigan DNR area biologist Tom Weise reported a nesting territory on the south end of Sugar Island in the St. Mary's River below the locks in the spring of 1979. A late April survey indicated one nest was active (eagle sitting on the nest) but late May observations suggested the nesting was unsuccessful. One bald eagle was observed in a second territory on Sugar Island, but no evidence of nesting was observed. A third pair of eagles were seen on the Canadian side of the river but apparently were not nesting. Whether the nesting pair on the south end of Sugar Island were the same two adult birds observed by Messrs. Robinson and Jensen during their winter survey could not be determined.

These studies and observations indicate the Sault Ste. Marie lock area and upper St. Mary's River support a small eagle population. Although the pair of eagles observed wintering in the area was occasionally flushed by boats, it was not disturbed enough to leave, and it is conceivable that this same wintering pair stayed in the area to nest.

Therefore, it is my biological opinion that the proposed 30-day extension of the operation of the locks at Sault Ste. Marie, Michigan, is not likely to jeopardize the continued existence of the northern bald eagle.

I am concerned, however, with the potential secondary effects of extending the operation of the Sault Ste. Marie locks from December 15 to January 15, which I interpret as extending the St. Lawrence Seaway navigation season for the same period. In the event of an oil spill, floundering waterfowl could become prey of the opportunistic feeding bald eagle. This would in turn subject the eagle to the same body oiling hazards encountered by the waterfowl. In light of this potential hazard I strongly recommend all oil spill prevention regulations be enacted and strictly enforced.

Another concern is the possible delay of the normal southern migration of eagles by creating unnatural temporary feeding pools. These pools would undoubtedly freeze after January 15, stranding eagles in a severe weather area without sufficient food. The resulting stress conditions could have an adverse impact on wintering birds.

In reference to other endangered and threatened species provided in our list of June 26, 1979, the Arctic peregrine falcon (Falco peregrinus tundrius) and the American peregrine falcon (Falco peregrinus anatum) only migrate through the area and no known potential nesting habitat exists within the project limits. Since no perch or resting trees will be disturbed, it is my biological opinion that the project action, as proposed, is not likely to jeopardize the continued existence of the Arctic or American peregrine falcon.

The gray wolf (Canis lupus) is a known inhabitant of the Upper Peninsula of Michigan and favorable habitat still exists in that area. It is suspected that the wolf population in the Upper Peninsula is maintained by animals crossing from Ontario, Canada. Since no studies have been conducted to determine the effects of lock operation extension (i.e., winter navigation) on land mammals, we cannot provide you with an opinion on the gray wolf at this time. When the current study by Dr. William Robinson and Dr. Roy E. Heath (Northern Michigan University) on migrations and dispersal of land mammals in the eastern Lake Superior and the St. Mary's River Area is completed, please reinitiate this consultation by providing us with a copy of their final report. If the report provides us with sufficient information we will provide you with a biological opinion on the effects of the proposed project on the gray wolf.

I hope this document will satisfy your requirements for the draft and final supplement for the Final Environmental Statement for Operation, Maintenance, and Minor Improvement of the Federal Facilities at Sault Ste. Marie, Michigan If additional comment is necessary or you have questions regarding these opinions, please contact the Region 3 Endangered Species Office at 612-725-3596.

Sincerely yours,

Harvey K. Nelson
Regional Director

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1027
DETROIT, MICHIGAN 48231

12 OCT 1979

NCDED-PP

Mr. Harvey K. Nelson
Regional Director
U.S. Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, Minnesota

Dear Mr. Nelson:

Reference is made to your 14 August 1979 letter and our 4 October 1979 meeting in Twin Cities concerning extension of the Soo Lock operations and the gray wolf.

We are requesting mutual agreement in extension of the biological assessment period beyond the 180 days required by the Endangered Species Act of 1973, section 7(c) until completion of the mammal migration study. Funds for this study were transferred to your office in September 1978 (Interservice Agreement NCL-78-32). Completion of this study should provide your office sufficient information to facilitate a final biological opinion on the gray wolf in relation to the proposed limited extension.

We have included, as per discussion on 4 October, criteria for closure (Incl 1) within the proposed limited season operation plan. This criteria for closure should prevent any irreversible or irretrievable commitment of resources that would jeopardize the continued existence and potential recruitment of the gray wolf within the affected environment of the proposed action.

Discussion on 4 October also indicated that monitoring of an operational limited navigational season extension is necessary to form a final gray wolf determination.

We are asking your conditional concurrence that implementation of the proposed operational plan for extension of lock operation and resulting vessel movement would not form any irreversible or irretrievable commitment that would jeopardize the existence of the gray wolf.

[illegible] PD-[illegible] 12 OCT 197[illegible]

Mr. [illegible]arvey [illegible]. [illegible]elson

As you know, we have a serious time problem with this project. To allow time for success, I must have the Final Environmental supplement filed with [illegible] no later than 1[illegible] October. Therefore, I need your concurrence by 1[illegible] October. Please respond by telecopy.

Sincerely,

signed

P. McCALLISTER
Acting District Engineer

1 Incl
[illegible] stated

Form 3-265

FISH AND WILDLIFE SERVICE	FAXFORM	
TO: Dist Engr, US Army Engr Dist, Attn: NCEED-ER, PO Box 1027, Detroit, MI 48231	DATE Oct 18,'79	TIME pm
FROM: Reg Dir, US Fish & Wildlife Service (SE) Fed Bldg, Ft Snelling, Twin Cities, MN 55111	[XX] Deliver on regular mail run [ ] Call to have picked up	
SUBJECT: Biological assessment re extension of Soo Lockoperations & the gray wolf		

I concur with your proposed agreement to extend the consultation period beyond the 180 days required by the Endangered Species Act of 1973, Section 7(c), as amended, to allow completion of a biological assessment. A land mammal migration and dispersal study was initiated August 14, 1979 which should provide data on gray wolf migrations in Eastern Lake Superior and the St. Mary's river area. A requirement of the current biological assessment study is that the lock operation be extended to a maximum of January 15, 1980. If sufficient data is obtained from the subject assessment, a biological opinion on the effects of limited extension on the winter migrations of the gray wolf will be issued.

Pg 1 of 1

D.N. Kasmussen

APPENDIX I

COMMENTS AND RESPONSES ON THE DRAFT SUPPLEMENT TO THE OPERATION & MAINTENANCE ENVIRONMENTAL IMPACT STATEMENT FOR THE FEDERAL FACILITIES AT SAULT STE. MARIE, MICHIGAN, ADDRESSING LIMITED SEASON EXTENSION OF OPERATION

COMMENTS AND RESPONSES ON THE
DRAFT SUPPLEMENT TO THE OPERATION & MAINTENANCE
ENVIRONMENTAL IMPACT STATEMENT FOR THE FEDERAL FACILITIES
AT SAULT STE. MARIE, MICHIGAN,
ADDRESSING LIMITED SEASON EXTENSION OF OPERATION

The following is a list of agencies and individuals from whom comments have been received concerning the environmental impacts of the proposed project:

FEDERAL AGENCIES

STATE AND LOCAL AGENCIES

PRIVATE GROUPS AND ORGANIZATIONS

United States Department of Agriculture
Soil Conservation Service
1405 South Harrison Road, Room 101
East Lansing, Michigan
48823

July 25, 1979

U.S. Army Engineer
Detroit District
P.O. Box 1027
Detroit, Michigan 48231

Attention: Chief, Environmental Resources Branch

Dear Sir:

We have reviewed the draft supplement to Operations and Maintenance Environmental Impact Statement of the Federal Facilities at Sault Ste. Marie, Michigan. We have no comments to make.

Sincerely,

Arthur H. Cratty
State Conservationist

cc: R. M. Davis, Administrator, SCS, Washington, D.C.
5 copies - Director, Office of Federal Activities, (Mail code A-104)
Environmental Protection Agency, Room 537, West Tower,
401 M Street, S.W., Washington, D.C. 20460

AHC:rwg:glo 5079A

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington D.C. 20230
(202) 377-4335

August 22, 1979

U.S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

Dear Sir:

This is in reference to your draft Environmental Impact Statement entitled, "Federal Facilities at Sault Ste. Marie, Michigan." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving seven copies of the final statement.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure: Memos from:
NOAA-Environmental Research Laboratories-
Eugene J. Aubert
Maritime Administration-George C. Steinman

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL RESEARCH LABORATORIES

Great Lakes Environmental Research Laboratory
2300 Washtenaw Avenue
Ann Arbor, MI 48104

August 3, 1979

TO: Richard L. Lehman, Acting Director
Office of Ecology and Conservation, EC

FROM: Eugene J. Aubert, RF24
Director, GLERL

SUBJECT: DEIS 7907.25 - Sault Ste. Marie, Michigan (Supplement)

The subject DEIS prepared by the Corps of Engineers, Detroit District, on limited extension of operation season of federal facilities at Sault Ste. Marie, Michigan, has been reviewed and comments herewith submitted.

The Impact Statement discusses a plan to operate two of the four navigation locks at Sault Ste. Marie, Michigan to about 8 January. The proposed extension of navigation season beyond the historic closing date of 15 December will require some ice control measures. We estimate that the impact on Lake Superior and St. Marys River will remain minor. /.

1. Concur. Ice control measures are recommended for the proposed extension beyond 15 December. Please refer to Section I of this document.

UNITED STATES DEPARTMENT OF COMMERCE
Maritime Administration

August 17, 1979

MEMORANDUM FOR: Dr. Sidney R. Galler
Deputy Assistant Secretary for Environmental Affairs
Department of Commerce

Subject: Draft Supplement to the Operation and Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan (CN 7907.25)

In accordance with your memorandum of July 23, 1979, the Maritime Administration has reviewed the subject draft supplement and submits the following comments.

1. Selected Plan, pg II-2

Of primary concern to the Maritime Administration is the selection of the January 8 date, plus or minus one week, as an established closing date for the operation of the Federal locks at Sault Ste. Marie, Michigan. While this date has been selected by the Corps of Engineers as one that requires a minimum amount of mitigation measures to be taken, it does not satisfy the needs of the commercial maritime interest of both the United States and Canada, particularly the operators of lake bulk vessels. Predicated on the positions taken in their letters, the Lake Carrier's Association and the Dominion Marine Association have requested the Soo (Sault Ste. Marie) locks to be kept open as long as practical this coming winter. These requests represent a "reasonable demand of commerce" which, according to our understanding, has been the determining mandate for the Corps of Engineers to operate the locks, "weather and ice conditions permitting". To arbitrarily select a January 8 closing date does not conform with the Corps of Engineers' requirement to respond to the "reasonable demand" mandate since weather and ice conditions vary from year to year. A fixed closing date would adversely affect the economic benefits that can be gained through operating as long as conditions permit. 2.

1. The National Environmental Policy Act of 1969 has placed additional legal constraints on the Corps of Engineers' ability to operate the locks. In the absence of sufficient information to define environmental impacts, and in the absence of any means to mitigate damages to riparians, the only prudent course of action is to close the locks when judgement indicates that damages are becoming substantive. Such considerations were used in developing the "when to stop" criteria. The supporting logic is that when ice and weather conditions become severe to the point of causing more than minimal damage, navigation should cease.

2. Operations would proceed as long as conditions and demand permit. For minimal environmental damage, these conditions have been identified in part as factors to be considered for a closure decision as described in Section I. These also would affect economic benefits.

Additionally, the selection of the January 8 date does not agree with two previously prepared reports which are currently pending review and action by the Congress. The first of these was an "Interim Feasibility Report on Season Extension" published in March 1976, which indicated a closing date of January 31 plus or minus 2 weeks. This was considered technically and economically feasible; while the second report "Draft Main Report and Environmental Study, Survey Report on Great Lakes Season Extension" published in March 1979, recommends a proposed plan that would keep the upper four lakes, including the Soo Locks, open year-round. To select a date, if indeed any date is needed, that does not agree with proposals contained in the Season Extension reports seems superfluous, and unwise, particularly at a time when these proposals are being reviewed by the Congress and are under heavy criticism from other interests. 3.

2. Development Aspects - St. Marys River Area, pg III-13

Table 3 is a very poor selection of statistics to show any extended season is required since none of the extended season figures, except one, equals the tonnage shown for 1948, 1953, and 1957 without season extension. Also there is no explanation that the development of iron ore pellets enables movement during the winter due to the reduced moisture content as opposed to raw iron ore. 4.

3. Effects of the Extended Operation of the Federal Facilities Under the Selected Plan Without Mitigative Measures, pg IV-3

The last sentence of paragraph 4.09 contradicts the preceding sentence and paragraph 4.08. If the studies show little or no impact on several sociological and environmental areas, why is there a need to have the last sentence, paragraph 4.09 state that "there may be potential adverse secondary impacts?" These secondary impacts are then left unexplained. 5.

George C. Steinman

GEORGE C. STEINMAN
Chief, Division of Environmental Activities
Office of Shipbuilding Costs

3. This environmental document concerns the limited season extension of the Soo Lock operation and does not in itself address the Great Lakes and St. Lawrence Seaway Navigation Season Extension Program.

The feasibility documents referred to have indicated engineering and economic feasibility. The Winter Navigation Board considered it necessary to continue environmental studies to document the validity of assumptions, observations, and conclusions reached with regard to expected impacts and environmental feasibility. The Survey Study for the Great Lakes and St. Lawrence Seaway Navigation Season Extension-Draft Main Report and Environmental Statement requires an Adaptive Method approach including an adaptive assessment technique to determine/confirm the environmental feasibility of the proposed program in advance of operation.

The Operation and Maintenance document differs from feasibility documents in that it requires a more precise account of the potential environmental consequences of project activities.

4. The chart showing tonnage moved during both the normal season and extended season is taken from Statistical Report of Lake Commerce Passing Through the Canal at Sault Ste. Marie, Michigan for several seasons and is believed to be accurate. Unfortunately, such a table does not explain all of the economic changes over the years. One reason that the tonnage is greater for 1948-65 seasons, during the normal season, may be the fact that with the locks closing in the middle of December it was necessary to ship large amounts of materials for stockpiling purposes. With the advent of extended seasons, especially the 1976-77 and 78-79 seasons, the need for stockpiling decreased and, consequently, so did the total short tons shipped during the normal season. Comparison of the sum of the normal season tonnage and the extended season tonnage (for 1968-69, 71-72, 74-75 76-77, 78-79) indicates that the total amount shipped during the normal extended season has increased over the years.

A paragraph explaining the fact that the development of iron ore pellets enables shipment during the winter has been added to Section I, paragraph 1.06.

5. This section has been further clarified. There are little or no direct impacts from extended locks operation on the areas listed in 4.07 of the Draft Supplement; however, there are potential adverse secondary impacts (i.e., those impacts caused by vessel movement in an [illegible] physical and environmental parameters. A discussion of these secondary impacts can be found in Section IV of the FEIS supplement.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

August 9, 1979

Mr. P. McCallister
Chief, Engineering Division
U.S. Army Engineer District
ATTN: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

We have reviewed the Draft Supplement to the Operations and Maintenance Environmental Impact Statement (EIS) of the Federal Facilities at Sault Ste. Marie, Michigan. We are responding on behalf of the Public Health Service. The following comments are offered for your use in preparing the final supplement.

We understand that the proposed action is to extend the navigation season from approximately April 1 until January 8. While the EIS indicates that the proposal would have no known direct long-term major adverse environmental effects on the project area, we do, however, have some concerns about potential spills and accidents.

Since the potential for adverse spills exist, we believe that certain measures should be instituted before the encouragement of any winter shipments of oil and hazardous materials through the project facilities. Until (1) an adequate spill containment and cleanup contingency program is prepared and demonstrated for ice-covered waters, (2) ships comply with existing Coast Guard operating and design criteria for winter use, and (3) shipment routes of oil and hazardous materials are publicly acknowledged, winter shipment of oil and hazardous materials should be discouraged. 1.

The EIS should include an assessment of all accidents and/or injuries that have occurred as a result of winter navigation operations. Potential hazards and causes of accidents should be evaluated and discussed in terms of what measures could be implemented to improve safety, and reduce the potential for spills. 2.

1. Please refer to the Corps' responses to comments of the Department of the Interior.

2. No accidents involving oil or hazardous substance spills have occurred on the St. Marys River as a result of winter navigation operations. According to the U.S. Coast Guard, spills in other locations have been cleaned up; discussion of same can be found in referenced reports.

Thank you for the opportunity to review this draft supplement. We would appreciate receiving one copy of the final supplement when it becomes available.

Sincerely yours,

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Bureau of State Services

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 79/680

SEP 11 1979

Mr. P. McCallister
Chief, Engineering Division
Detroit District, Corps of Engineers
Department of the Army
Post Office Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

This is in reply to your letter of July 10, 1979, requesting our views and comments on a draft supplement to the O&M environmental statement for the Federal Facilities at Sault Ste. Marie, Michigan. Your proposal is suggesting the extension of the navigation season by extending the period of lock operations at two of the four locks at Sault Ste. Marie from December 15 to January 8 plus or minus one week. We have completed our review of this draft supplement and submit the following general and specific comments for your consideration and use.

The proposed action does not appear to adversely impact on the programs and missions of the National Park Service, the Bureau of Mines or the Office of Surface Mining Reclamation and Enforcement. They have no objection to the proposed action from the standpoint of their program areas of interest.

General Comments

There are five Land and Water Conservation Fund projects and one surplus property project located along the St. Marys River which could be affected by increased erosion as a result of the proposed action. Included are projects 26 - 00139, Sherman Park; 26 - 00141, Mission Road Park; and 26 - 00979, Sault Ste. Marie; project 26 - 00241, Campground Development, Brimley State Park, administered by the Michigan Department of Natural Resources; and project 26 - 00959, Bay Mills Recreation Area, administered by the Bay Mills Indian Community. /1

The Lower Coast Guard Base, currently under application for transfer to the City of Sault Ste. Marie for recreational

1. Information provided on parks and properties has been noted in Appendix C of this statement. The actual date of closing the locks, between 1 and 15 January, is dependent on ice and weather conditions. Erosion and shore structure damage become significant when vessels must exert extra power to overcome heavy ice conditions. Implementing the closure decision procedure should result in halting of traffic when ice conditions cause vessel difficulty. Substantial shore damage in the above areas should not occur beyond that encountered with on-going navigation and natural causes.

purposes under surplus property project GR-MICH-563, is also located along the St. Marys River.

The question of increased erosion should be discussed and appropriate mitigative measures addressed. 2.

There is a possibility that the limited season extension of operation would threaten lake whitefish (coregonus clupeaformis), cisco (coregonus artedii), and round whitefish (prosopium cylindranceum) populations, with regard to eggs and possibly juveniles, in the St. Marys River. The extension may also threaten prey/forage species that are utilized by lake trout (salvelinus namaycush). The reason for the concern is that during winter, the eggs of many species are vulnerable to being buried by excessive siltation. This is caused by the action of ships raising silt off the river bottom and redepositing it over spawning grounds. There is a limited program of research in this direction being pursued by Lake Superior State College; the results are not in as of yet. Consequently, the limited season extension could threaten the economic well-being of subsistence and commercial fishermen from Bay Mills and Sault Ste. Marie in the long term and would be of concern to Indian interests. 3.

Since the locks were kept open for the past five winters, continuation of present practice would seem to be a reasonable alternative. There appears to be an assumption that the locks will not be operated year-round in the near future, but we found no explanation of why this would not be feasible, or of why it should not be among the alternatives evaluated. Significant benefits that might be realized by keeping the locks open as long as practicable have been briefly summarized in the letter on pages A-1 and A-2, and we believe that these and any other benefits should be fully analyzed in the supplement to the FES. Other benefits are summarized in Section I on pages IV-25 to IV-26, but a quantitative analysis of these benefits would be useful. The report does not mention any impact so severe that it would preclude continued year-round operation of the locks, but in absence of a quantitative evaluation of the impacts and benefits it is not possible to form a meaningful judgment. For example, information was not provided on the cost of keeping locks open all year for the past five winters, or of the benefits that were derived therefrom. It was shown in Table 3 that during the past three years an average of 6.2 million tons were shipped during each extended season, compared to about 100 million tons during each normal season. Evidently the extended season permitted an increase in shipping by more than 6 percent annually during those three years. In view of the facts that two-thirds of the iron 4. 5. 6.

2. Shore erosion and structure damage is discussed in Section IV of the Final Supplement.

Mitigation as defined by CEQ (40 CFR 1508.2) can include "minimizing impacts by limiting the degree or magnitude of the action and its implementation. It is this type of mitigation the Corps is implementing under the proposed action for shore erosion through its operational plan.

3. Whitefish spawning occurs in November and December, primarily during the normal navigation season. While ships pushing through heavy ice could increase the sedimentation over the eggs and increase mortality in those beds near the channel the monitoring studies conducted by Lake Superior State College and with the option to alter operations should adverse environmental impacts surface combine to decrease the chance of a drastic cost. That damage which may occur cannot be quantified, but studies are continuing to better define the degree of potential damage. The studies being done by Lake Superior State College were funded by the Corps under the extended Navigation Season Program Study Authority. The economic well being of subsistence and commercial fishermen from Bay Mills and Sault Ste. Marie may be affected, but the degree cannot be quantified. Navigation until at least 8 January has been occurring for the past ten years and the fishermen are still successful in earning a living. Other variables affecting the fishery include possible overfishing and the weather conditions. Some sources have stated that the whitefish populations have been decimated in the area due to overfishing. The reported population decline could be due to a combination of factors including extended season navigation. For further information, see Section IV.

Economic impacts of even this limited extension of the navigation season extension will be included in the analysis when the existence or likelihood of the impact is established and the extent quantified.

The extension of the navigation season year-round, including lock operations, is being considered through the authorized feasibility study. The Survey Report on findings, including an economic analysis, is scheduled for Washington review in FY 1980. The economic benefits accruing from extending navigation to 8 January ± 1 week are discussed in Sec. II. The alternative of year-round navigation has now been addressed in this document, along with the reasons for its non-selection at this time.

4. Keeping the locks open year-round for the past five years was a result of the Demonstration Program authorized by the Congress. The Congressional authority for this program ended on 30 September 1979. The Demonstration Program has proven that it is technically feasible to operate the locks year-round.

5. Qunatified benefits and costs are shown in table 2 on page II-5.

6. Year-round operation of the locks, with the extension of winter navigation, is currently under study to determine feasibility. Energy consumption comparisons is fully discussed in the Survey Study document to be completed by December 1979. This operational extension (8 January ± 1 week) has not been analyzed specifically, but conclusions are extrapolated from the report, "Energy Impact of Great Lakes-St. Lawrence Seaway Navigation Extension, TERA, Inc., 15 November 1978, in the Final Survey Report. Year-round operation is now addressed as an alternative in this supplement.

ore produced in the U.S. and Canada is shipped through the locks (p. III-12, par. 3.28) and that steel production is at the highest level it has been for several years (p. A-1, par. 2), the national interest in keeping the locks open as long as possible should be fully analyzed. It has also been noted that extension of the season permits a savings in energy due to the high energy efficiency of water-borne commerce (p. I-2, par. 1.06), and it is noted in correspondence (p. A-1, par. 4) that even with the locks open it was necessary to ship iron ore pellets by rail to keep the Gary Mills in operation all winter. Because of the energy crisis, the alternative of year-round operation of the locks during the coming winter, at least, should be adequately analyzed from the standpoint of national interest. 6.

The Draft Supplement's proposal would work a substantial change in the overall system. The navigation season--for all years--would be automatically extended, across the board, to "8 January, plus or minus one week." The judgment thus would have been made in advance that: "Sustaining the navigation season and mitigative measures associated with it are considered integral to the social and economic well-being of the Great Lakes Basin population and the Nation." (Draft Supplement, page iii). This across-the-board change in the baseline data plainly is not the sort of case-by-case exception which the Corps' present regulations contemplate. Therefore, we think it is necessary for the Corps' regulations to be changed to permit it. 7

The Draft Supplement describes a proposal that would extend the locks' navigation season for an average of three weeks and perhaps for as much as four weeks. This extension, thus, actually would involve thirty to forty percent of the ten-week period which the Corps of Engineers is now contemplating in its proposals for winter navigation on the Great Lakes. But the Corps has recommended that $150 million be allocated to the investigation of the consequences of that proposal, and a particular emphasis of the proposed investigation would be research into the environmental consequences of the extension. Further, the Corps has explicitly stated its commitment to a substantial environmental impact mitigation effort in it Survey Report on winter navigation extension, but the present document proposes nothing in the area of fish and wildlife impact mitigation. We must question the logic which recognizes the necessity to do baseline studies in order to evaluate the impacts of an extended navigation season for the Great Lakes, and then propose actions which incrementalize the decision on extending navigation before the baseline studies are completed. 8.

7. The proposed change does not mandate opening the locks until 8 January ± 1 week. The supplement to the EIS only means that should the reasonable demands of commerce show a need for opening the locks beyond 15 December, in accordance with the existing regulations, such an action would have been addressed under the National Environmental Policy Act as required. The judgment of need for the extension of the season will continue to be made on a case by case basis and the regulations should not require changing.

8. The extension to 8 January ± 1 week and the proposed extension to 31 January are not within the period for which baseline studies, in the amount referenced, are being considered. Mitigation of impacts on fish and wildlife resources is described in Sec. IV of this document and follows along lines recommended by FWS in coordination with the Corps. Implementation of these measures are being accomplished within limits imposed by budgetary considerations, priorities mutually agreed upon, and within a time period that could realistically produce the desired information. Since "minimum impact" is the target of the proposed 8 January extension, major mitigation and the full range of baseline studies are considered unnecessary.

The Fish and Wildlife Service has advised the Corps of Engineers that there is a substantial lack of "baseline data" which can be used to assess the effects of extended winter navigation. The Fish and Wildlife Service has recommended that, at some time in the very near future, the Corps establish a three-year moratorium on late-season navigation in order that an exhaustive program might be put into effect to gather that missing data. As indicated in previous correspondence on the Winter Navigation Program, disturbances from vessel traffic of fish and wildlife resources and their habitats are one of our major concerns with the program. The Winter Navigation Demonstration Program has permitted vessel traffic throughout the winter for the last five years, but this has occurred without knowing in many respects what impacts have been incurred by fish and wildlife resources in the connecting channels and other productive, sensitive shallow areas of the Great Lakes system. The tools needed to determine the environmental feasibility of winter navigation are in the developmental stages, and the initial step is to construct a baseline condition data base from which a monitoring program can be conducted. To help ensure that a monitoring program is sensitive enough to detect unnatural biological variations resulting from winter navigation, a sound data base to rely on is required. Much effort and governmental funding have already been expended in constructing a program that will be responsive to the environmental concerns raised by the Winter Navigation Program. It is crucial that the collection of information for establishing the data base is conducted in a "without the project" environment. To accomplish this, the Fish and Wildlife Service has requested a three-year moratorium on extended season navigation. If the data base information is not collected in what all parties agree to as the "without the project" environment, the reliability of the monitoring program will fall short of ascertaining whether variations in parameters selected for monitoring ecological processes are natural short-term occurrences, or whether winter navigation is unknowingly leading to a costly ecological change. The program will then be unsatisfactory for protecting the natural resources produced by the Great Lakes ecosystem. 9.

Furthermore, adequate biological data has not been gathered to assess the effects of the partial extension into the winter months. For these reasons, we have no alternative but to recommend that the proposed extension to January 8 not be implemented. 10.

These facts should be noted in the Final Supplement as well as mention of the moratorium on late season navigation. In order to 11.

9. What must be established is a definition of what time frame (or weather conditions) will be defined as "without the project." Navigation has proceeded beyond 15 December since 1967, and a "base condition" can only be defined through Agency agreement. The decision of what would constitute the base condition will be made in consultation with appropriate State and Federal agencies, prior to initiating a major study program outlined in the Survey Report, if authorized.

10. Since the collection of baseline data considered necessary for year-round season extension has not been authorized or accomplished, the impacts expected to result from any season extension cannot be quantified. The estimated cost of obtaining the baseline data exceeds $130 million, and such an effort is not considered reasonable for the proposed three to four week extension of the navigation season. The National Environmental Policy Act does not require quantification of impacts or the acquisition of data at an exorbitant cost. Therefore, this supplement to the 0&M Environmental Impact Statement addresses itself to the "worst case" situation.

11. Please refer to Appendix D. Studies for this program could be implemented through operational authority and funding limited by available budgeted amounts. Efforts are continuing to better define impacts, and study proposals are coordinated with appropriate State and Federal agencies.

obtain needed baseline environmental data, there should also be mention of the use of, or the need for, any portion of the $150 million which the Corps contemplates using in the investigation of the consequences of the Winter Navigation Program. 11

Thus, the Draft Supplement seems to us to be inconsistent with the Corps' established policy concerning the investigation of winter navigation, and therefore to be inconsistent with the regulations of the Council on Environmental Quality which states that: 12.

> "Agencies shall integrate the NEPA process with other planning at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts." 40 CFR Section 1501.2 (1978)

Moreover, since the Corps of Engineers has, itself, proposed a substantial budget to study the unknown environmental effects of the Winter Navigation Program, and since the Fish and Wildlife Service believes that such effects cannot be known when there is a substantial lack of baseline data, we think the Draft Supplement also can be faulted under the following requirement of CEQ's regulations:

> "When an agency is evaluating significant adverse effects on the human environment in an environmental impact statement and there are gaps in relevant information or scientific uncertainty, the agency shall always make clear that such information is lacking or that uncertainty exists. 13.
>
> "(a) If the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement." Id., Section 1502.22 (1978)

We feel that the scope of the anlysis in the draft supplement is inadequate. The supplement does not address the potential cumulative effects of several successive extensions of the season to January 8, plus or minus one week. Also, no consideration has been given to the adverse environmental aspects of project-induced business and industrial activities in the region or the relationship of the project to further extensions of the season and more deepening and widening of the connecting channels and harbors. The secondary and cumulative impacts of these related activities need to be addressed. 14. 15.

12. The referenced regulation, applicable to the planning process, is being followed by the Corps for the Survey Study. This operational program, under which the proposed limited extension would be conducted, is consistent with the NEPA process and CEQ guidelines. Please see response 10 above.

13. The Final Supplement has been revised to reflect the uncertainties which exist, including discussion the exorbitant cost of obtaining the necessary information for the limited extension, and a "worst case" evaluation.

14. Please refer to Sec. IV for a discussion of cumulative effects. Present considerations given to monitoring studies and criteria for operating to the point of minimal effects should provide means for predicting some cumulative effects.

15. Additional information on social-economic effects has been included in Section IV. Future improvements referenced are more appropriately applicable to the total, system-wide impacts of winter navigation and are included in the Survey Study being prepared. They are also addressed in Section IV to the extent practicable for the proposed limited extension.

The Final Supplement should also address types of cargoes, potential for spills and environmental conditions and impacts at all harbors. The supplement should indicate to what extent the ports and connecting channels are equipped to deal with spills of oil and hazardous materials for which no cleanup techniques exist. The final supplement should also state how long shipping activities would continue after the closing date of locks, and describe proposed mitigation or discuss why no mitigation is currently proposed at the ports and connecting channels. At a minimum, the Corps should prohibit the shipment of toxic and hazardous materials and authorize only ice strengthened ships to navigate after December 15.

The Draft Supplement proposal is to accomplish about three weeks, or one-third, of the 10-week reduction in winter "down-time" proposed by the Corps' Survey Report on the Winter Navigation Program. Accordingly, the Final Supplement should indicate how the benefit-cost ratio of the larger Winter Navigation Program project will be adjusted. As a first approximation, it would seem that one-third of the benefits ascribed to the larger project as a result of operating the St. Marys River locks could no longer be credited to the Winter Navigation Program. The cost part of the balance, however, would probably change little for none of the great construction expense of the larger project will be necessary to accomplish the Draft Supplement's proposal. With this proper readjustment of the benefit-cost ratio, the longer season extension project could be modified to drop from further consideration those areas no longer above a benefit-cost ratio of unity. This would reduce damages to fish and wildlife and their habitats by limiting the physical extent of areas that would be impacted by winter shipping, the measures to accomplish and sustain it, and the attendant hazards associated with it.

Specific Comments

Page I-2 Project Description - The Final Supplement should indicate that the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and appropriate State conservation agencies will be included with those who will decide when "impacts on local communities or the environment become substantive..." and the methods to be used to make these determinations.

Page IV-17 Biological Environment - The effect of this project on the baseline environmental studies proposed as part of the Navigation Season Extension Project should be discussed. Unbiased baseline information cannot be gathered with the proposed extension of operation at Sault Ste. Marie.

16. Additional information has been incorporated into Appendix D on the subject of oil and hazardous material spills. This includes harbor of origin-destination, kinds of materials shipped (as available). Contingency planning is presently in progress by the Corps on the St. Marys River. A hydrology study would be initiated and emergency plan completed as a coordinated effort by the Corps. The Corps is responsible for operations related to the locks; contingency planning for harbors would be accomplished by these entities in coordination with the U.S. Coast Guard. Additionally, the information in Appendix D shows that only relatively small quantities of oil and hazardous substances and materials are shipped in winter. Such cargos, to date, have been limited to fuel oil and gasoline.

17. Section IV addresses this subject. Information not presently available is noted and appropriate means for obtaining it is described. In addition, the Operating Plan for Emergency Actions-St. Clair River is being updated at the request of the Board. A similar plan is being developed for the St. Marys River and would be coordinated through the same agencies and through the Board. It should be noted that the operations plan for the St. Marys River identifies Corps responsibility solely with operations of the locks, although measures implemented would be available to other members of the consortium, in other parts of the system.

18. It is estimated that the minimum time lapse which could occur between identification of conditions dictating closure and vessels transitting the system would be 7 days. This would permit a ship at the Soo to return to the southern most port of Lorain. If a vessel, outward bound from Lorain, were to complete the projected trip to Duluth and return, the estimated time is two weeks from notification of closure. Please review Section I for the planned closure procedure. It should be noted that closure of the locks does not stop navigation. Navigation should be expected to continue on Lakes Erie, Huron and Michigan as no law prohibits such commerce. Should the Canadians continue opening the Welland Canal, shipment to Lake Ontario could also proceed into the winter period. The proposed limited extension of lock operations at Sault Ste. Marie does not affect such sailings.

19. Control of type of cargoes and type of vessels sailing is not within the regulatory authority of the Corps of Engineers. Such controls are exercised by the U.S. Coast Guard under its regulatory procedures.

20. The larger winter navigation program (survey study) includes benefits from only the period after 31 January. Interim I feasibility study describes activities, costs and benefits through 31 January. This operational period under discussion, to 8 January ± one week, does not require adjustment of the cost-benefit ratio of either program. (See Response to Comment 7).

21. Please refer to responses to response 20. Each project and supporting document would be self-sufficient, but synergistic. The benefit/cost ratios for each of the three considered extensions do not require modification.

22. Coordination of operationally extended winter navigation would be accomplished through an Interim Winter Board, as recommended by the Acting Board, consisting of six groups: Corps of Engineers, U.S.

Page IV-18, Paragraph 4.57 - The effects of surge currents, the redistribution of bottom sediments associated with drawdown, and surge waves should be presented in the discussion on impacts on fish spawning. The St. Marys River lake herring population should be presented in the discussion on impacts on fish spawning. The St. Marys River lake herring population should also be identified as a significant breeding stock for Lake Huron populations that stands to be adversely impacted by the proposal. 24.

Page IV-22, Paragraphs 4.68 and 4.69 - The discussion pertaining to an oil spill in ice-covered fluvial waters of the St. Marys River is inadequate. The letter from the Dominion Marine Association (Appendix A of the draft EIS) designates petroleum products and caustic soda as tanker-carried products. In this respect, all petroleum products should be identified, as well as a discussion on the potential impacts from spills resulting from expected transportation of oil and other hazardous materials during the extended season period. Also, the methodology and success of containment and clean-up of these materials in the ice-covered waters of the St. Marys River should be presented. 25. 26.

Page IV-25, Paragraph 4.78 - The discussion given to the release of petroleum products is not specific enough to relate to impacts that would occur to biotic communities in the St. Marys River under ice conditions. The discussion should address short and long-term effects on benthic and plant communities, fish populations and spawning areas, waterfowl, eagles, and other wildlife inhabiting the river corridor. These effects should also be discussed with respect to direct contact, food chains, and expected duration. 27.

Page IV-27, Irreversible and Irretrievable Commitment of Resources Which Would be Involved in the Proposed Action Should It Be Implemented, 4.84 - In the absence of the baseline studies mentioned above, or other adequate environmental impact studies, it is premature to conclude that "no unacceptable adverse effects..." will occur. 28.

Summary

We are considering here a proposal that would accomplish about one-third of the proposal for the Navigation Season Excension of the Great Lakes-St. Lawrence River System. The latter project is one of the largest, most complex, and most expensive undertaken by the Corps and an appropriately large commitment to investigate and correct adverse impacts to fish and wildlife has been made.

Coast Guard, Great Lakes Commission, State of Michigan, industry and labor representatives: This group would have the authority to coordinate Soo closure consideration.

... Baseline studies is described by the feasibility study of the Navigation Season Extension Project begin with 31 January as the base condition and would not be affected by this project. (See Sec. IV)

24. These effects are discussed in Section IV, with results of studies conducted. At the present time, information is inconclusive in regard to any adverse effects which may be project related. A "worst case" situation has been presented.

25. Information on this subject has been added to Sec. IV. See also responses to Comments 8 and 17, and Appendix D.

26. Primary responsibility for containment and cleanup of hazardous materials on St. Marys River is vested in the Coast Guard. The responsibility of the Corps is limited to the Soo locks. In the past it has been the practice to open the locks when spills occur and allow hazardous material - particularly inflamatory substances - to pass through. Present policy (being implemented) requires containment and cleanup within the locks. Technology for accomplishing this would be utilized. Such efforts are funded under operational authority and would be carried out in coordination with other agency efforts in this area. Please refer to additional information in Sec. IV on this subject.

27. Biological and chemical effects of oil spills are discussed in detail in Sec. IV. This information references detailed discussion included in the Survey Study for year-round navigation on the Great Lakes-St. Lawrence Seaway system. Detailed duplication of the previously published document should not be necessary for this supplement.

28. This has been discussed in responses to comments 8 and 13, and is of "minimal damage". Studies will be continued for verification of assumptions on which this conclusion is based.

The plan of the Draft Supplement proposes nothing for pre-project studies, post-project monitoring, or fish and wildlife impact mitigation. We are in an area where the means and possibility for serious environmental harm exceeds the means to predict or correct the harm. We recommend that the Corps of Engineers contact the Regional Director of the Fish and Wildlife Service, Twin Cities, Minnesota, prior to preparation of the Final Supplement to develop, insofar as possible, measures and mechanisms to protect fish and wildlife resources and their habitats and to discuss other issues raised in this review of the Draft Supplement. 29.

From the standpoint of fish and wildlife resource well-being, the "no project" alternative appears to be the best selection to protect the resource base in the absence of good baseline data. Alternatives 2, 3, and 4 follow in order of increasing adverse impact to fish and wildlife resources. 30.

Thank you for the opportunity to review this draft supplement for extending the navigation season at Sault Ste. Marie, Michigan.

Sincerely,

Deputy Assistant SECRETARY

29. Two meetings were held: 28 September 1979 at Corps of Engineers Detroit District offices and 4 October 1979 in FWS Region III offices in Minneapolis. Monitoring and other proposed studies are listed in Appendix F. The only mitigation measures identified in these meetings were the setting of factors considered for closure decision. Further mitigation should, theoretically, not be necessary. Monitoring studies would be continued to check for any need for mitigation in the future.

30. Section IV of the Final Supplement gives recognition to the increasing impacts expected to result as the navigation season is extended. However, each winter, in accordance with the regulations, the Division Engineer of the North Central Division must make a decision on how long the locks will be kept open to meet the reasonable demands of commerce. In this decision process, he must consider the increasing impacts and weigh this against the economic needs of the Nation for the continuance of commercial navigation. Such decisions are addressed in the Record of Decision required prior to extending the season for FY 80 and in the decision for subsequent years.

U S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION 5
18209 DIXIE HIGHWAY
HOMEWOOD ILLINOIS 60430

August 3, 1979

IN REPLY REFER TO
HED-05

U.S. Army Engineer District, Detroit
P. O. Box 1027
Detroit, Michigan 48231

ATTN: Chief, Environmental Resources Branch

Gentlemen:

The draft supplemental environmental statement for limited extension of operation, maintenance and minor improvements to Federal facilities at Sault Ste. Marie, Michigan, has been reviewed. It has been determined that the proposed action will have no adverse effect on Federal-aid highways or improvements in the area.

Sincerely yours,

Donald E. Trull
Regional Administrator

By:
W. G. Emrich, Director
Office of Environment and Design

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

July 25, 1979

Mr. P. McCallister
Corps of Engineers - Detroit
P. O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

I am replying to your request of July 10, 1979 to the Federal Energy Regulatory Commission for comments on the Draft Environmental Impact Statement for the Sault Ste. Marie Facilities in Michigan. This Draft EIS has been reviewed by appropriate FERC staff components upon whose evaluation this response is based.

The staff concentrates its review of other agencies' environmental impact statements basically on those areas of the electric power, natural gas, and oil pipeline industries for which the Commission has jurisdiction by law, or where staff has special expertise in evaluating environmental impacts involved with the proposed action. It does not appear that there would be any significant impacts in these areas of concern nor serious conflicts with this agency's responsibilities should this action be undertaken.

Thank you for the opportunity to review this statement.

Sincerely,

Jack M. Heinemann
Advisor on Environmental Quality

FEDERAL ENERGY REGULATORY COMMISSION
CHICAGO REGIONAL OFFICE
230 SOUTH DEARBORN STREET, ROOM 3130
CHICAGO, ILLINOIS 60604

September 25, 1979

Colonel Melvyn D. Remus, District Engineer
Detroit District, Corps of Engineers
Department or the Army
P.O. Box 1027
Detroit, Michigan 48231

Dear Colonel Remus:

This is in reply to your letter of July 10, 1979, requesting our comments on the Draft Supplement to Operations and Maintenance Environmental Impact Statement of the Federal facilities at Sault Ste. Marie, Michigan, Addressing Limited Season Operation Extension. The comments of this office are made in accordance with the National Environmental Policy Act of 1969 and the August 1, 1973 Guidelines of the Council on Environmental Quality. Our review of the statement is principally oriented toward determining the effect of the proposals on matters related to the Commission's responsibilities. These responsibilities pertain to the development of hydroelectric power and the construction and operation of natural gas pipeline facilities. These comments are those of the Federal Energy Regulatory Commission's Chicago Regional Office, and therefore do not necessarily reflect the views of the Federal Energy Regulatory Commission.

Your attention is directed to the comments provided in our letters of July 14, 1978 and February 27, 1978 relating to other documents pertaining to winter season navigation extensions. 1

This draft supplement Environmental Statement does not discuss adverse effects on the above facilities with which we are concerned, and therefore we have no further comments.

Thank you for the opportunity to comment on the Draft Supplement EIS.

Sincerely,

Lawrence F. Coffill

Lawrence F. Coffill
Regional Engineer

1. Previous letters have been responded to in the appropriate documents. Those other documents have been referenced in this report.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST
CHICAGO ILLINOIS 60604

20 SEP 1979

Mr. P. McCallister
Environmental Resources Branch
U.S. Army Engineer District, Detroit
P.O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

We have completed our review of the Draft Supplement to the Operation and Maintenance Environmental Impact Statement (EIS) for the Federal Facilities at Sault Ste. Marie, Michigan. The project calls for the extension of the vessel navigation season in the St. Marys River and operation of the locks at Sault Ste. Marie (Soo Locks). The proposed extension would be for a period of two weeks, plus or minus one week, during the start of the expected seasonal icing conditions, and would extend the season to approximately January 8.

We have classified our comments as ER-2. Specifically, this means that the Draft EIS does not contain sufficient information to fully assess the environmental impact of the proposed project. However, based on the information provided, we have made a preliminary determination that the planned project poses significant environmental reservations which we bring to your attention in the attached. Our classification and date of comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions. 1.

Principally, our major concerns center on the potential environmental impacts of the proposed incremental approach to implementing the navigation season by a few weeks, and the need for quantification of the secondary impacts of icebreaking operations and vessel movements and their mitigating measures. We also have serious concerns regarding the environmental impacts of the project on wetlands and of unrecovered oils spilled during winter operations. For our technical evaluation, we find a need for more detailed substantiation of water quality data. 2.

We find that the analysis of alternatives would be more complete if the full year-round navigation season extension were to be assessed together with the other alternatives indicated. 3.

We request that the recommendations in the attached comments be incorporated into the Final EIS for the project. Three copies of the Final EIS, when completed, should be forwarded to this office for review.

1. Classification of the Draft Supplement as ER-2 is noted. Information requested and additional information has been added to the Final Supplement. This should provide for an adequate assessment of environmental impacts of the proposed project.

2. Please refer to Section I, in which reference is made to the proposed operational extension. The proposed change does not mandate opening the locks until 8 January ± one week. The Supplement to the EIS only means that should the reasonable demands of commerce show a need for opening the locks beyond 15 December, in accordance with existing regulations, such an action would have been addressed under NEPA as required. For the limited season extension, the Corps would base its operational plan on the minimal damage point using factors to be considered for a closure decision, eliminating the need for major mitigative measures unless some such measure should later be specifically identified as essential. Primary and wetlands secondary impacts, including icebreaking operations and vessel movements, are addressed in Sec. IV. The Final Supplement has been revised to reflect the uncertainties which exist, discusses the exhorbitant cost of obtaining the necessary information for the limited extension, and presents a "worst case" evaluation. A discussion of the effects of spillages is included in Sec. IV. This information references detailed discussions included in the Survey Study for year-round navigation on the Great Lakes-St. Lawrence Seaway System. Duplication of the previously published document should not be necessary for this Supplement.

3. Please refer to Response No. 1. Full year-round navigation is being studied separately, including lock operations through the autorized feasibility study. The alternative of year-round navigation has now been addressed in this document, along with reasons for its non-selection at this time.

Thank you for the opportunity to review the Draft Supplement EIS for the Federal Facilities at Sault Ste. Marie, Michigan. If you have any questions regarding our comments, please contact Mr. Max Hanok, at 312/353-2307.

Sincerely yours,

Ronald L. Mustard

Ronald L. Mustard, Director
Office of Federal Activities

Attachment

EPA COMMENTS ON THE DRAFT SUPPLEMENTAL EIS
FOR OPERATION OF THE FEDERAL FACILITIES
AT SAULT STE. MARIE

OPERATIONAL ENVIRONMENTAL IMPACTS

The Draft EIS proposes an incremental approach to extension of the navigation season at the Sault Ste. Marie Locks (Soo Locks) and the St. Marys River by two to three weeks to the start of the critical icing stage in the winter. Concurrently, a Draft EIS for the Extended Winter Navigation Season, on which EPA has commented, proposed a year-round navigation season for the Great Lakes system, which includes the St. Marys River and the Soo Locks. We have some concerns with the correlation between these two programs and we request a clarification of the relative environmental impacts of these two proposed alternative approaches. 4.

The approach in the Draft EIS, for extension of the winter navigation season by two to three weeks at Sault Ste. Marie, indicates that there is a critical river icing stage at about January 8. The concept that there is a critical date, before which there will be little environmental impact and after which there could be extensive long range environmental impacts, appears to be the basis for consideration of mitigating measures. This distinction between short and long range environmental effects needs clarification. 5.

We also have concerns with the feasibility of the proposal that the Corps will terminate operations at the Soo Locks and the St. Marys River before major environmental impacts arise from ice movements during severe operations. We recommend that this approach be reconsidered in the Final EIS in terms of the availability of monitoring equipment and predictive technologies to allow this kind of determination to be made just before environmental impacts occur. 6.

SUBSTANTIATION

There is a need in the Draft EIS for specific substantiation of several broadly stated environmental impacts of the project. Two typical examples are the statements that extended operations of the Federal facilities of the duration anticipated would have no known direct, long-term major adverse environmental effects and that there is no increase in water turbidity due to ice-breaking and bubbler operations. We recommend that data or experience be cited, where necessary, to support the broad statements in the Draft EIS. 7.

SECONDARY IMPACTS

Ice-breaking operations for the proposed extended vessel navigation season at the Soo Locks and the St. Marys River may cause secondary impacts due to effects on shore structures, winter recreation facilities, and the effects of ice-breaking vessel movements, as indicated in the Draft EIS. Although we generally agree with the contention in the document that factors such as sediment transport would not be affected to a large degree by ice-breaking operations, we suggest that quantification of the possible impacts would enhance the project proposal and provide a basis for decision on mitigating measures. 8.

4. Please refer to Response 2 above and to Responses 10, 20, and 23, U.S. Department of the Interior, Fish and Wildlife Service.

5. Please refer to Sec. I, in which the factors for consideration of closing the locks would be in part based on an accumulation of freezing degree days which correlate with the appearance of navigationally significant ice. Major impacts could result from vessel passage overcoming heavy ice conditions. "Worst" conditions are described in Sec. IV in the absence of baseline data to quantify effects. Refer also to Response No. 18, U.S. Department of Interior, FWS.

6. Please refer to Sec. I for a description of factors to be considered for a closure decision. The basic assumption is that environmental impacts are largely proportional to physical impacts which can be predicted within the current state of the art.

7. The Final Supplement has been revised to reflect the uncertainties that exist, discusses the exhorbitant cost of obtaining the necessary information for the limited extension, and presents a "worst case" evaluation. Please refer to Section IV in which substantiation for effect-analysis is discussed.

8. The secondary impacts of icebreaking operations are discussed in Sec. IV with results of studies conducted. The "worst case" is described since information is inconclusive in regard to any adverse effect which may be project related. Please refer to Response 7, above.

The very significant negative impacts of sediment movements on fish spawning in the project waterways is well stated in the Draft EIS and is a serious environmental concern. Mitigating measures are not offered in the draft. The significance of this impact, in terms of the overall program, needs a comprehensive assessment in the Final EIS as a major basis for a decision on the feasibility of the project.

9. Please refer to Responses 3, 8 and 29, U.S. Department of Interior, FWS.

We recommend that if it is not possible to predict the locations and extent of ice-breaking support, that the worst conditions and highest levels of ice-breaking required should be considered as a basis for assessing environmental impacts and mitigative measures for this necessary type of action.

10. Please refer to Sec. I for a description of factors to be considered for closure decision in terms of icebreaking requirements. No major mitigative measures are considered necessary, but should such measures be identified they would be included.

WATER QUALITY

The water quality impacts of the project need quantification of the data base for the area. While the existing water quality and the pollutants generated in the St. Marys River from Canada are discussed in some detail, there is little indication of the specifics of the water quality of the U.S. side. We recommend that the water quality of both the U.S. and Canadian sides be quantified to provide an adequate basis for assessing the environmental impacts of the project and the mitigating measures, if any are required.

11. Effects on water quality are described in Sec. IV. Available baseline information is provided. With limited extension of navigation, consideration factors, and "worst case" predictions, no major impacts on water quality, requiring mitigation or further quantification was identified. Additional information on water quality on the U.S. side of the river has been added to Section III.

ALTERNATIVES

The alternatives for action considered in the Draft EIS span incremental extensions of the navigation season by 10 days to a total of 46 days to January 31. We feel that the ultimate extension of the winter navigation season extension throughout the year should be added to the alternatives considered, together with mitigating measures to provide a better basis for decision on the environmental feasibility of the project. This added alternative is included in the action plan alternatives for year around navigation extension proposed in the Corps' Draft EIS for the Great Lakes Navigation Season Extension. The two programs proposed for Sault Ste. Marie should be correlated with one another.

12. The alterative of year-round navigation has now been added to Sections I and IV of the Final Supplement, along with the reasons for its non-selection at this time.

OIL SPILL IMPACTS

We consider the increased incidence of oil spills during difficult cold weather operations to be a very probable and serious type of adverse environmental impact. The Corps and Coast Guard's scenario for clean-up of oil spills for the St. Marys River, as described in the Draft EIS for the Winter Navigation Survey Study, is comprehensive. However, we have reservations as to the percent recovery which can be expected using the complex arctic recovery equipment and techniques described in the scenario. The environmental impacts of unrecovered spilled oil, if significant, should be projected in the Final EIS.

13. Please refer to Responses 16, 26 and 27, U.S. Department of Interior, FWS.

WETLANDS

We recommend that the major wetlands affected by the extension of the navigation season, not currently defined for the Sault Ste. Marie project area, should be as fully identified as possible in the Final EIS to permit a more complete assessment of the environmental benefits and disbenefits of the proposed project. The effects on the disturbance of animal and fish spawning habitats could well be significant and irreversible, even if ship movements and ice-breaking operations are stopped. 14.

COSTS AND BENEFITS

We have some concern over the environmental impacts which may accrue from actions based on the economic justification for the project. The costs, and consequently the environmental impacts of ice-breaking operations, are not included in the Benefit/Cost ratio. Some of these secondary impacts have been pointed out earlier in this letter. Benefit/Cost (B/C) ratios of 70/1 and 30/1 for some of the alternatives considered seem to be unlikely or unrealistic. A positive impact, that of energy savings, if the project is implemented as indicated in the Draft EIS, could be significant and should be substantiated. 15.

14. Sensitive shoreline areas along the St. Marys River are discussed in Sec. IV, with results of studies conducted. Regarding effects on fish spawning areas, please refer to Response No. 3, U.S. Department of Interior, FWS, as well as to Sec. IV. A current study on mammals, with emphasis on wolf migration and potential impacts, are discussed in Sec. IV.

15. The benefit-to-cost ratios have been obtained through computational analysis. Conclusions on energy savings have been extrapolated from the report, "Energy Impact of Great Lakes-St. Lawrence Seaway Navigation Season Extension," TERA, Inc., 15 November 1978, in Sec. IV of the Final Supplement. Energy consumption comparisons are fully discussed in the Survey Study document to be completed by December 1979. Environmental impacts are addressed in the text of this report. The benefit/cost ratio's have been recomputed and are based on the current rates of transporting coal and iron ore from their origin to destination. The winter rate savings derived from these rates are based on data derived from the Winter Rate Study. Stockpiling savings have been included for iron ore.

Clearinghouse Use Only

State Identification No.
79 0750 0000
Date Received 7/16/79
Review Terminated 8/6/79

INDIANA STATE CLEARINGHOUSE
A-95 RESPONSE

TO: P. McCallister
Chief, Engineering Division
Corps of Engineers

Project Description (Nature, Purpose, Location):

DEIS Supplement-Operation & Maintenance of Federal Facilities at Sault Ste.Marie-Michigan

DOD
Federal Program Title; Agency and FDA Catalog Number.

Amount of Funds Requested

The following agencies have reviewed the above project and make the following disposition concerning this application:

Department of Natural Resourc — John Feingold
Reviewing Agency — Contact Person

FAVORABLY xx FAVORABLY ____ WITH COMMENTS ____

Reviewing Agency — Contact Person

FAVORABLY ____ UNFAVORABLY ____ WITH COMMENTS ____

Reviewing Agency — Contact Person

FAVORABLY ____ UNFAVORABLY ____ WITH COMMENTS ____

The A-95 response, along with any reviewing agency comments is to be attached to your formal application being submitted to the appropriate Federal Agency. These comments will be kept on file in the State Clearinghouse for one year.

Deborah D Artis — August 13, 1979
Indiana State Clearinghouse — Date
State Planning Services Agency
143 West Market Street, Suite 300
Indianapolis, Indiana 46204
317/633-4346
State Form 3162

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, GOVERNOR

DEPARTMENT OF TRANSPORTATION

TRANSPORTATION BUILDING, 425 WEST OTTAWA PHONE 517 373-2090
POST OFFICE BOX 30050, LANSING, MICHIGAN 48909

JOHN P. WOODFORD, DIRECTOR

July 27, 1979

Mr. P. McCallister, Chief
Engineering Division
U.S. Army Engineer District, Detroit
Environmental Resources Branch
P. O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

The Environmental and Community Factors Division has reviewed the "Draft Supplement to the Operation and Maintenance Environmental Impact Statement (DSEIS) for the Federal Facilities at Sault Ste. Marie, Michigan."

In reviewing the DSEIS, we noted discrepancies between the mitigation measures described for Alternatives 2 and 3 in the "Summary" (page iv) and those described in Table 2 (page II-5) and in "Effects of the Alternatives and their Mitigative Measures should they be Implemented" (page IV-11).

Because the mitigation measures proposed for each alternative greatly influence both the Benefit/Cost Ratios and the environmental impacts described for each alternative, we believe it to be appropriate to consistently define the mitigation measures proposed for each alternative, and to account for these mitigation efforts in the Benefit/Cost Ratios for the project proposal.

Sincerely,

Jan W. Raad, Manager
Environmental Liaison Section
Environmental and Community
Factors Division

1. The changes listed on the erratum sheet for the document have been incorporated into the Final FIS, thus eliminating these discrepancies.

MICHIGAN DEPARTMENT OF STATE
RICHARD H. AUSTIN SECRETARY OF STATE

LANSING
MICHIGAN 48918

MICHIGAN HISTORY DIVISION
ADMINISTRATION, ARCHIVES,
HISTORIC SITES, AND PUBLICATIONS
3423 N. Logan Street
517-373-0510
STATE MUSEUM
505 N. Washington Avenue
517-373-0515

September 7, 1979

Re: ER-1458 (MHD)
Draft Supplement to the Operation
and Maintenance EIS for the
Federal Facilities at Sault
Ste. Marie, Michigan,
Addressing Limited Season
Extension of Operation

U. S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources Branch
P. O. Box 1027
Detroit, Michigan 48231

Dear Sir:

Our staff has reviewed this project and concludes
that it will have no effect on cultural resources.

If you have further questions, please contact
Dr. John R. Halsey, Environmental Review Coordinator
for the Michigan History Division.

Thank you for giving us the opportunity to comment.

Sincerely,

Martha M. Bigelow
Director, Michigan History Division
and
State Historic Preservation Officer

By: Michael J. Washo
Deputy State Historic Preservation Officer

MJW/JRH:tj

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
JACOB A. HOEFER
CARL T. JOHNSON
F. M. [illegible]
HILARY F. SNELL
HARRY H. WHITTAKER
JOAN L. WOLFE
CHARLES YOUNGLOVE

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director

August 31, 1979

U.S. Army Corps of Engineers
Detroit District
P.O. Box 1027
Detroit, Michigan 48231

Attention: Chief, Environmental Resources Branch

Dear Sir:

The Michigan Department of Natural Resources has reviewed the Draft Supplement to the Operation and Maintenance Environmental Impact Statement for the Federal Facilities in Sault Ste. Marie, Michigan, addressing limited season extension of operation.

Our major concern involves the impacts of winter operation of the Soo Locks, rather than the specific times of operation. These impacts (mitigation for erosion damage, oil spill protection, fish spawning, etc.) are detailed in our letter of December 5, 1978, in response to the Final Environmental Impact Statement for the Navigation Season Extension Demonstration Program for Fiscal Year 1979, and in other Departmental communications regarding winter navigation.

I reemphasize Governor Milliken's position that the State will not support this project unless comprehensive environmental, recreational, social and economic studies are made, and it is clearly demonstrated that the project benefits significantly outweigh all costs to assure that environmental and social impacts are minimized. In addition, it is my understanding that operation of this project will be controlled and monitored by an interagency board in which Michigan has a major role.

Sincerely,

Samuel A. Milstein

for Howard A. Tanner
Director

1. Environmental studies which have been identified to date in Appendix G would provide needed information for operational extension of winter navigation to between 1-15 January. Please refer to Section I. In addition, factors to be considered for closure decision have been developed, aimed at a "minimal damage" objective. These criteria would be used by the Interim Winter Board in coordination and monitoring of operations, and the State of Michigan is on the Board.

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

September 18, 1979

U.S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources
Branch
P.O. Box 1027
Detroit, Michigan 48231

Re: Supplement to the Operation & Maintenance Environmental Impact Statement for Federal Facilities at Sault Ste. Marie, Michigan

Dear Mr. McCallister:

Pursuant to a recent telephone request from Ms. Jody Yearous of your staff, and under our federal consistency responsibility as required by Section 307 of the Coastal Zone Management Act of 1972, the Division of Land Resource Programs of the Michigan Department of Natural Resources has reveiwed the referenced document. Based on this review and current State of Michigan policy regarding navigation season extension, staff has determined that the proposed project is inconsistent with the approved Michigan Coastal Management Program.

The policy of the State of Michigan with respect to the navigation season extension on the Great Lakes is stated by Governor William G. Milliken:

> "Michigan will support a modest, yet flexible extension in the navigation season on the upper Great Lakes provided that environmental and economic studies be undertaken to establish on a permanent basis, a means for determining the environmental conditions which would require the closing of the navigation season. Included in these studies should be efforts to ascertain whether winter navigation has a negative impact on the Great Lakes fishery and waterfowl wintering, whether ice cover concentrates prop wash from ships, thus creating scour and sedimentation, and whether operations during ice conditions contribute to increased turbidity."
> (June 14, 1979)

This current policy is essentially the same as the policy stated on page 74 of the Final Environmental Impact Statement for Michigan's Coastal Management Program (July 1978).

In addition, the rules and regulations developed pursuant to Section 307 of P.L. 92-583 require federal agencies to provide the state coastal agency

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1027
DETROIT, MICHIGAN 48231

NCEED-ER

Dr. Howard A. Tanner
Director
Michigan Department of Natural Resources
Box 30028
Lansing, Michigan 48909

1 OCT 1979

Dear Dr. Tanner:

Thank you for the letter of 18 September 1979 from Mr. Karl R. Rosford, Chief of the Division of Land Resource Programs. That letter stated that the proposed extension of the navigation season at the Soo Locks was inconsistent with the approved Michigan Coastal Zone Management Program. This decision was based on an interpretation of Governor Milliken's stated policy which was quoted in the letter.

We would like to emphasize that the proposed closing of the locks, as stated in the Supplement to the Environmental Impact Statement, is based on the premise of minimal damage. We request that you reconsider the determination of "inconsistency" in light of the information provided by this letter. The extension of the season as proposed is modest and flexible as requested by the Governor, and the State of Michigan will be represented on the group of agencies which will determine the exact date the navigation season should close.

Although the statement of consistency was inadvertently omitted from the draft supplement, it can be added to the final supplement. The draft supplement did include a detailed description of the activity, its associated facilities, and their coastal zone effects. We believe the supplement (with the other documents incorporated by reference) provides details commensurate with the expected effects of the activity on the coastal zone. The limited extension proposed is expected to have only minimal effects.

Many public hearings have been held on the subject of extended season navigation, and at least four of these were held at Sault Ste. Marie. We are aware of the opposition of riparian owners along the St. Marys River. These concerns are the primary basis of our selection of 8 January as the target date for closure.

with a statement of consistency. Federal Register Vol. 43, No. 49, Monday, March 13, 1978, states:

> "The consistency determination shall also include a detailed description of the activity, its associated facilities, and their coastal zone effects, and comprehensive data and information sufficient to support the federal agency's consistency statement. The amount of detail in the statement evaluation, activity description and supporting information shall be commensurate with the expected effects of the activity on the coastal zone."

This information is to be prepared so as to determine reasonably the consistency of the activity with the state's approved coastal management program. This statement does not appear in this report.

The state relies in part on the requirements of the National Environmental Policy Act (NEPA) to determine whether sufficient information has been provided. NEPA requires the preparation of a detailed environmental impact statement on major actions significantly affecting the human environment. The EIS is to be part of the decision-making process and is to include careful consideration of environmental effects and mitigative measures to minimize adverse effects. This supplemental O&M report references the Draft Survey Report for Navigation Season Extension, March 1979. The survey report states that detailed environmental studies would be done by employing the so-called adaptive method. Using this technique, the Corps of Engineers would undertake detailed environmental studies of winter navigation only after Congressional approval to proceed with year round season extension. These detailed studies have not been initiated.

Also, the supplemental report identifies "perceived/potential impacts to the natural and human environment..." further suggesting that detailed information on the current environmental condition of the Great Lakes and the impacts of winter navigation on the environment has not been studied.

Finally, the report indicates a beneficial social impact will result from the proposed activities, yet no public hearing has been held to receive comments from those affected by the project. Our information indicates that local residents do not favor winter navigation season extension because of damages caused by ship movement through the ice.

In conclusion, the proposed action to extend the navigation season at the Sault Locks to January 8th is found to be inconsistent with the policies of Michigan's Coastal Management Program. Further, the Corps of Engineers has not provided necessary and sufficient information to determine reasonably the consistency of season extension activities with the Michigan Coastal Management Program. Until such time as detailed environmental studies are completed to determine the effects of winter navigation on the Great Lakes, sufficient information does not exist, and any extension of the navigation season cannot be found to be consistent with Michigan's Coastal Management Program.

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1027
DETROIT, MICHIGAN 48231

NCKED-H
Mr. Howard A. Tanner

1 OCT

For these reasons, we believe that the proposed extension to 8 January is consistent with Michigan's Coastal Zone Management Program, and we request reconsideration of your determination. If you have any further questions, please do not hesitate to call me at 313-226-6762.

Sincerely,

C. S. THOMPSON, JR.
LTC, Corps of Engineers
Acting District Engineer

Copy furnished:
Mr. William Parks,
Michigan DNR
Mr. Larry Pitts,
Michigan DNR
Mr. Karl Kosford,
Michigan, DNR

If you have any questions, please contact Chris Shafer of my staff at 517/373-1950.

Sincerely,

Karl R. Hosford, Chief
Division of Land Resource Programs

KRH:JR:jg

cc: Honorable Senator Levin
Honorable Congressman Bonior
Dr. Howard A. Tanner
O. J. Scherschligt
B. Rustem
B. Marks
D. Inman

STATE CLEARINGHOUSE

30 EAST BROAD STREET • 24TH FLOOR • COLUMBUS, OHIO 43215 • 614/466-746

July 27, 1979

P. McCallister
U.S. Army Engineer District, Detroit
ATTN: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

RE: State Clearinghouse A-95 Review
Project Title: Draft Supplement to the Operation & Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan
SAI Number: 36-422-0003 **Federal Catalog Number:** N/A
Proposed Federal Funding: N/A

Dear Applicant:

Your notification to apply for federal funds was received on the above date. The review process will now begin at the state level. You may expect notification that the review has been completed no later than 32 days following the receipt date. PLEASE NOTE: A State Application Identifier Number (SAI) has been assigned to your project. Please refer to this number in all future contacts with the State Clearinghouse.

Please note the areawide agencies listed below. If a check mark appears above the agency's initials, you must also submit your proposal at the local level for an A-95 review. A complete mailing address may be found on the reverse side of this notice.

Sincerely,

Jean Haverly
Francine Metzger

Jean Haverly - Local Projects
Francine Metzger - State Projects
A-95 Coordinators
STATE CLEARINGHOUSE

cc: BHHVRDD OMEGA NEFCO MAUMEE MORPC NOACA RC-RPC
MVRPC L-ACRPC CC-SRPC EDATA OKI TMACOG KYOVA
BOM BHJ OVRDC MWOJPC NSCOG

STATE CLEARINGHOUSE

30 EAST BROAD STREET • 39TH FLOOR • COLUMBUS OHIO 43215 • 614 / 466-7461

August 23, 1979

Mr. P. McCallister
U.S. Army Engineer District
Corps of Engineers, Detroit
P.O. Box 1027
Detroit, Michigan 48231

Attn: Chief, Environmental Resources Branch

RE: Review of Environmental Impact Statement/Assessment
Title: Draft Supplement to the Operation & Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan
SAI Number: 36-422-0003

Dear Mr. McCallister:

The State Clearinghouse coordinated the review of the above referenced environmental impact statement/assessment.

This environmental report was reviewed by all interested State agencies. Reviewing agencies have not stated any specific concerns relating to this report.

Thank you for the opportunity to review this statement/assessment.

Sincerely,

Judith Y. Brachman

Judith Y. Brachman
Administering Officer

JYB:frm

cc: DNR, Mike Colvin
EPA, Gene Wright

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
P. O. Box 1467, Harrisburg, Pennsylvania 17120

July 24, 1979

In reply refer to
RM-R
F 110:7
Your Ref. NCEED-ER

P. McCallister, Chief
Engineering Division
Corps of Engineers - Detroit District
P. O. Box 1027
Detroit, Michigan 48231

Attn: Chief Environmental Resources
Branch

Dear Mr. McCallister:

This is in response to your recent request for comments on the Draft Supplement to Operations and Maintenance Environmental Impact Statement of Facilities at Sault Ste. Marie, Michigan, for Limited Season Operation Extension.

Because the environmental effects associated with the draft's suggested limited navigation extension (January 8th) are mostly local and remote from Pennsylvania, we prefer that such impacts be addressed by those more directly concerned. We do suggest, however, that the opportunity be fully utilized to add to the knowledge of environmental effects of extended navigation in the area during the proposed extension.

Thank you for the opportunity to review the draft.

Sincerely,

C. H. McConnell, Deputy Secretary
Resources Management

City of Milwaukee

Board of Harbor Commissioners
August 13, 1979

Commissioners
Raymond E. Majerus, President
Joseph W. Checota, Vice President
Raymond A. Gazinski
Cynthia Kukor
Daniel J. Steininger
Harold M. Mayer
John S. Randall
RADM Roy F. Hoffmann (U.S.N. Ret.)
Marine Engineer Secretary

38-14
33-1-21
60-1

U. S. Army Engineer District, Detroit
P. O. Box 1027
Detroit, MI 48231

Attention: Chief, Environmental Resources Branch

Gentlemen:

We thank you for the opportunity given to us to review the "Draft Supplement to the Operation and Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan," dated July 1979. Given the set of circumstances including annual variations in the ice conditions, your past experience in efforts to extend the seasonal operations of the Soo Locks to meet the needs of traffic, and the limitations at this time on the extent of required mitigating measures which may be imposed, we consider your conclusion to extend the operations of the locks to 8 January ± one week to be realistic and pragmatic.

Section 1.12 of the Draft refers to letters having been received to request extension to seasonal lockage. There are only two such letters in Appendix A. Realizing that such requests must be on file before season extension can be considered, and that these letters represent many lines of the Great Lakes Fleet, the impact of only two such letters tends to give fuel to the oft heard charge that season extension programs are to serve just a few special interests. The letters and their references might well be eliminated, with the letter contents amplified in the narrative of the "Purpose" section of the Draft.

The purpose of the extension of seasonal operations of the Soo Locks is addressed primarily to domestic/Canadian movement of raw and finished products. The full utilization of the Soo Locks during the extension period should ultimately include impact from a corresponding extension period throughout the lockages and

1. The two letters referenced directly state the case of the shippers and are included for this reason. Generally, requests are received in November so that long range weather forecasts may provide information for a decision by the Division Engineer, to grant or deny the requests. Additional requests may be received post dating this document.

2. Concur. Full utilization of the lock system for transporting agricultural harvest crops is one of the reasons cited for the need for action. However, opening the Welland Canal and St. Lawrence Seaway is beyond the authority of the Corps, requiring Canadian participation. Opening the full system is proposed in the Final Survey Report, along with a recommended course of action for properly achieving that goal.

channelization of the St. Lawrence Seaway System. The present time frame does not allow the Duluth-Superior ports to complete the export movement of the annual agricultural harvest crops (wheat, feed grains, sunflower seeds). A total System extension to mid-January would provide for the completion of this important harvest movement to the world markets. 2.

Although the Port of Milwaukee will not receive direct benefit from seasonal operations extension of the Soo Locks, the Port and area community will receive important secondary benefit. There is regular barge movement throughout the winter months of finished steel products, particularly coil steel, from the Indiana mills to the Milwaukee area industry. Adequate supplies of iron ore to the mills reflect in uninterrupted production of our steel products manufacturing industry.

This Draft Supplement is recognized as the set of conclusions extended from the environmental impact statement of the Season Extension Demonstration Program. From the expenditures and experience gained in the Demonstration Program, your recommendation of operational navigation extension to 8 January ± one week is the logical next step of implementation. This program is valuable to the national economy and energy conservation as stated, and continuing observations and assessments of the program will be of great value to the total considerations of best use of the Great Lakes in best National interest. We totally support the season extension of operation as presented in your Draft Supplement.

Sincerely,

R. F. HOFFMANN
Rear Admiral, USN (Ret.)
Municipal Port Director

RFH/EKA/rac

cc: Mr. James Fish, Executive Director, Great Lakes Commission, Institute of Science and Technology Building, 2200 N. Bonisteel Blvd., Rm. 5104, Ann Arbor, MI 48105
Members, Wisconsin Council of Great Lakes Ports

City of Superior, Wisconsin

A MAYOR-ALDERMAN CITY

The Heart of the Continent

OFFICE OF

HARBOR COMMISSION

September 4, 1979

U.S. Army Engineer District
Detroit-Corps of Engineers
P.O. Box 10270
Detroit, Michigan 48231

Dear Sirs:

Upon review of your draft supplement to the Operation and Maintenance Environmental Impact Statement for the federal facilities at Sault Sainte Marie, Michigan, addressing limited season extension of operation, I understand that you are recommending a season extension until July 8, plus or minus one week.

As representative of the Superior Board of Harbor Commissioners, we wish to go on record in support of that extension of the shipping season. There may be reason, however, to go beyond that date and we encourage the Corps of Engineers to continue its studies for a potential further extension of the Seaway and the Sault Lock seasons.

Sincerely,

James R. McCarville (cjw)

James R. McCarville
Port Director/Secretary
Board of Harbor Commissioners

JRM:cjw

PICKFORD TOWNSHIP

PICKFORD, MICHIGAN 49774

July 19, 1979

Department of the Army
Detroit District, Corps of Engineers
Box 1027
Detroit, Michigan 48231

ATTENTION: CNDED-E, Environmental Resources Branch

Sir:

In reply to your letter and draft supplement with reference to the extended navigation on the St. Mary's River System I am enclosing a copy of the Resolution of action by the Pickford Township Board which speaks to the problem.

I feel that the resolution covers all points that we in the area are concerned with.

Sincerely,

Orrin F. Huyck, Supervisor

Orrin F. Huyck

OFH/hml
Enc.

TOWNSHIP OF PICKFORD

RESOLUTION CONCERNING YEAR-AROUND NAVIGATION AND SHIPPING
IN THE SAINT MARY'S RIVER SYSTEM

WHEREAS; The Department of Army, Corps of Engineers have conducted extensive tests of winter navigationin the St. Mary's River and the Great Lakes in conjunction with users of the waterway system; and

WHEREAS; the operation of the Saint Mary's Falls Canal Locks and River along the fifteen miles of Sault Ste. Marie waterfront, and the waterfront of all the river system as far as De Tour and Drummond Island, during the winter season is know to cause extensive damage to private and public property, disrupts normal transport to the adjoining islands, contributes to the potentially dangerous movement of ice which is hazardous to winter sports, fisheries and other activities; and

WHEREAS; The River and Harbor Act of 1970, as amended by the Water Resources Development Act of 1976, states that investigation of measures necessary to ameliorate any adverse impact upon local communities and shall be included on the program; and

WHEREAS; it is believed that insufficient and incomplete environmental impact studies have been made concerning the effects of winter operation of the waterway system on the contiguous lands, facilities and other public and private use of the area in wintertime.

NOW BE IT RESOLVED: that the Township of Pickford, Pickford, Michigan hereby request that the Navigation Season Extension Program be specifically required to complete its environmental impact study to determine the full detrimental effects to all waterfront property and the methods of ameliorating such effects through prevention, compensation or correction; and

BE IT FURTHER RESOLVED; that the Navigation Extension Program be held in a state of moratorium until complete environmental impact study and analysis is completed and approved after full public hearing and disclosure, and further that the Environmental and Public Works Committee, chaired by Senator Jennings Randolph, U. S. Senator from West Virginia, Democrat, be respectfully requested to conduct at least one public hearing in Chippewa County.

BE IT FURTHER RESOLVED, that the Congress of the United States be formally requested to assure that intent of the River and Harbor Act to protect the welfare and property of public and private owners be completely implemented.

BE IT FINALLY RESOLVED, that copies of this resolution be furnished to the President of the United States, Speaker of the United States House of Representatives, the Michigan Congressional Delegation and the Governor of the State of Michigan.

I hereby certify that the avove is a true and exact copy of a resolution adopted by the Township Board of Pickford, Pickford, Michigan, at a regular meeting held on Tuesday, May 1, 1979

JOHN A. SLATER
Twp. Clerk

1. For the proposed limited extension, the costs of appropriate mitigation and ice control measures are included in the benefit to costs ratio analysis and described in Section II.

2. Investigation required are included in the EPOA of the Survey Study. While the period of limited extension presently proposed is expected to produce no major adverse effects, any identified effects would receive consideration and appropriate action.

3. Studies on the effect of vessel movement in an ice environment on shore erosion and structure damage have been completed by the Cold Region Research Engineering Laboratory. Results of these and other studies have been incorporated into the Demonstration Program EIS's.

Impacts to recreation and tourism are also addressed in the Demonstration Program Reports and to a lesser extent in the FEIS for the Operations, Maintenance and Minor Improvements for the Federal Facilities at Sault Ste. Marie, Michigan, July 1977.

For the proposed limited season extension, the Corps would base its operational plan on the minimal damage point. Factors to be considered for closing the locks would be based in part on an accumulation of freezing degree days which correlated with the appearance of navigationally significant ice. This should eliminate the need for mitigation measures. However, the Corps would integrate mitigative measures identified as essential during future studies.

4. Environmental statements are being completed for both the operational extension to 8 January $\pm$ one week and the Survey Study for year-round navigation. Extensive environmental studies are being proposed in the EPOA, accompanying the Survey Study, which would be developed previous to the operational stage. Shore erosion and shore structure damage would be studied and means sought for minimizing or mitigating damage caused by winter navigation. Please refer to Section 4 of this Final Supplement where shore erosion and structural damages are discussed.

5. Referencing this comment to the limited operational extension program being proposed, please refer to response No. 3, above. Also, refer to response No. 8, U.S. Department of Interior, Fish and Wildlife Service.

6. This action of the Township Board is noted. Please refer to Section I of the Final Supplement, for project authorization.

ONRAIL

August 15, 1979

JAMES A. HAGEN
VICE PRESIDENT
MARKETING AND
SALES

Col. Melvyn D. Remus, District Engineer
U.S. Army Corps of Engineers
P.O. Box 1027
Detroit, MI 48231

Dear Colonel Remus:

I consider your July, 1979, "Draft Supplement to the Operation and Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan, Addressing Limited Season Extension of Operation" as an apparent continued effort on the part of the Corps of Engineers to commit the nation's taxpayers to a specific and expensive, long-term program without proper regard for the full costs directly attributable to the project.

Among the secondary beneficial impacts cited for the project are lower transportation costs. The $7,672,000 average annual benefit, based on $1.85 per ton rate savings, assumes that vessel operators will pass all cost reductions stemming from increased vessel utilization along to shippers. In reality, water carriers will retain a portion of the savings, passing little if any savings to the shipper. The portion retained represents a transfer payment directly to the carrier from taxpayers rather than a benefit to society. 1.

In addition, benefits accruing from transportation rate savings, cited in the report, are excessive. The March 1979 "Survey Study for Great Lakes and St. Lawrence Seaway Navigation Season Extension", showed in Table A-3, page SUP A-42 to Appendix E a comparison of through rates for these commodities via surface modes and the Seaway. 2.
The specific movements cited would not normally move through the Sault Ste. Marie facilities, but more importantly they constitute foreign trade, rather than domestic traffic and finally, the method of computing transportation rate savings causes us concern. Overland rates, estimated by a rate calculation model, produced rate surrogates whose amount per ton-mile exceeds Conrail's average revenue per ton mile for the same commodities. These rate excesses are from 70 to over 100 percent higher than 3.

4

1. The basic economic benefit of a navigation project is the reduction in the value of resources required to transport commodities. Navigation benefits can be categorized as:

a. Cost Reduction Benefit (Same Origin-Destination; Same Mode)

For traffic which uses a waterway both with and without a project, the benefit is the reduction in the cost of using the waterway. This reduction represents an economic efficiency (NED) gain because resources will be released for productive use elsewhere in the economy.

b. Shift of Mode Benefit (Same Origin-Destination; Different Mode)

For traffic which would use a waterway with the project, but without the project uses a different mode, the benefit is the difference between the costs of using the alternative mode without the project and the costs of using the waterway with the project. The economic benefit of the waterway to the national economy is the savings in resources from not having to use the next most costly mode. Specifically, the national economic benefit for the Federal waterway investment is the cost for using the alternative mode less all associated costs for the vessel and related operations, except for the cost of the Federal investment itself.

c. Shift of Origin-Destination Benefit (Different Mode; Different Origin-Destination)

When there is a shift in either the origin or destination of a commodity flow the difference in transportation costs with and without the project is not the appropriate measure of benefits. If implementation of approject would result in a shift in the origin of a commodity the benefit is taken as the difference in total cost of obtaining a commodity at its place of use with and without the project. If implementation of a project would result in a shift in the destination of a commodity the benefit is taken as the difference in net revenue to the producer with and without the project. The shift of origin-destination benefit cannot normally exceed the difference in transportation charges assuming the without project origin-destination would be the same as the with project origin-destination.

CONSOLIDATED RAIL CORPORATION SIX PENN CENTER PLAZA PHILADELPHIA PA 19104

Conrail's average revenues. Notably, where the disparity exceeds 100 percent, one must assume that the lake carriers propose negative rates. An example illustrating this point is the Table A3 rate for transporting iron and steel slabs from Cincinnati to Baltimore by rail. The table estimates a rate of $37 per long ton, or $33.04 per short ton. Conrail hauled no such traffic between Cincinnati and Baltimore in 1978, but did earned revenues totalling about 2.46¢ per ton-mile on iron and steel slabs in the same period. Multiplying the average by 644 miles, Docket 28300 miles, produces an average revenue of 2.76¢ per long ton mile, or $17.74 per long ton. In this instance, the rate method employed overstated land transport rates by $19.26, or more than 100 percent.

4.

Similarly, project costs are understated because the benefit/cost calculation failed to recognize the effects the project will have upon users of other transport modes. Railroads characteristically incur a high ratio of fixed to variable costs, with the result that traffic diversions to federally-financed waterway projects force residual railroad traffic to shoulder increasing higher fixed cost burdens, to the extent that allocable fixed cost increases will ultimately result in higher rail rates for residual rail shippers. Consequently, the project would increase net costs to society, fail to serve all shippers and place current rail operations, in proximity to the Upper Great Lakes Basin, in precarious financial conditions.

5

With just these omissions or oversights, I believe it is inappropriate to apply or seek federal funds to benefit one transport mode to the detriment of other competing modes. Conrail and the other railroads serving the Great Lakes states operate as common carriers, furnishing transportation upon reasonable request without discrimination, preference, or prejudice. Many users of the locks are not common carriers and can selectively compete for traffic now handled by the railroads, who have common carrier obligations.

6.

Accordingly, we urge that navigation season extension await completion of a study which

- distinguishes between benefits and transfer payments,

- accurately depicts land transport rates and whatever savings, if any, would accrue from project implementation, and,

7.

d. New Movement Benefit

In this case a commodity or additional quantities of a commodity would be transported only because of the lowered transportation charge with the project. The quantities are limited to increases in production and consumption resulting from lower transportation costs. An increase in waterways shipments resulting from a shift in origin or destination is not included. The new movement benefit is defined as the increase in producer and consumer surplus. Practically, it can be measured as the delivered price of the commodity less all associated economic costs, including all of the costs of barge transportation other than those of the proposed Federal improvement. This benefit, like the preceding one, cannot exceed the reduction in transportation costs achieved by the project.

Companies in the Great Lakes Region that may realize savings from the lower transportation costs associated with winter navigation may either pass these savings on to the consumers of the project in the form of lower prices, or they may invest these savings in the company, resulting in increased production, income and employment in the Great Lakes area. In addition, the tonnage that would be diverted to the Great Lakes as a result of season extension would generate increased revenue in both Great Lakes ports and the regional economies surrounding these ports. Direct port benefits are a measure of the purchases of goods and services directly required to support the movement of additional waterborne traffic through a port as a result of season extension (such as terminal, handling and stevedoring costs). These direct port benefits would then be respent in the regional economies surrounding these ports, resulting in additional income and employment in these adjacent areas.

The impact of a navigation season extension on the Great Lakes Region, as a whole, would be highly beneficial in the form of increased production and employment. On the other hand, it must be kept in mind that, if the Great Lakes System is not maintained and kept competitive, just the reverse could happen in the form of decreased production and employment.

- examines, or at least addresses, the societal costs which result from rail traffic diversion. 7.

Very truly yours,

2. Rates displayed in table A-3, page Sup A-42 cannot be compared to the transportation rate savings displayed in table 2 of the Environmental Impact Statement. The rates displayed in table A-3 are general cargo overseas rates. The transportation rate savings displayed in the Environmental Impact Statement are based on iron ore and coal movements on the Great Lakes only.

3. The specific movements cited in this Environmental Statement are only traffic moving through the Soo Locks and are predominantly iron ore to ports on the Great Lakes, such as Cleveland Harbor, Gary Harbor Indiana, Chicago, etc. None of the traffic addressed in this impact statement goes overseas.

4. This comment is in reference to the Survey Study and is not related to the proposed extension to 8 January on the Upper Lakes. For the Survey Study, numerous rates had to be gathered in order to establish rates as close to actual rates as possible, for different origin-destination sets. Rail rates are competitive rates; therefore, using the rate of one particular company would not give a time picture of rates on a particular origin-destination set. In order to make an accurate comparison of Conrails rate for transporting iron and steel slabs between Cincinnati and Baltimore, the actual rate would have to be known, not the earned revenue.

extension of winter navigation under the Survey Study. A Regional Impact Study, Intermodal Impact Study, and Energy Study were performed based upon year-round navigation. Copies of these studies are available upon request from the District Engineer.

5. Increased costs to residual rail shippers cannot be included as a cost to this program. Also there is no way of knowing what the impact upon other users of rail would be. This program has no control over the rate structure of the railroads if they are adversely impacted by this program or any other program. Bulk commodities such as iron ore, coal, and grain have traditionally moved via the Great Lakes and an extended season would only continue this trend.

6. While an entire railroad is a common carrier, shipper-owned cars operate over the system. Similarly, the Soo Locks are available to all carriers, whether for hire or committed to a single shipper. The users should not be confused with the mode of transportation itself. The Corps does not advocate the use of Federal funds for the advantage of a single mode to the detriment of another. The intent is to use all existing modes as efficiently as possible.

7. Studies have been completed which address the three points raised. These studies were performed for the proposed year-round

erg

September 10, 1979

Mr. P. McCallister
Chief Engineering Division
Department of the Army
Detroit District, Corps of Engineers
Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister,

At this time Environmental Research Group, Inc. has no comments regarding the Draft Supplement to the Operation and Maintenance Environmental Impact Statement for the Federal Facilities at Sault, St. Marie, Michigan. Our daily work load has been so extensive that on this Draft we found ourselves with no time to respond.

We appreciate that the Draft was sent for our comments and would like to continue receiving other Drafts especially as they relate to the Winter Navigation Issue.

Cordially,

Bruce Bartley

Bruce Bartley
Manager, Biological Services
Environmental Assessment Department

BB/jp

ENVIRONMENTAL RESEARCH GROUP, INC. • 117 N. FIRST • ANN ARBOR, MICHIGAN 48104 • 313/662-3104

LAKE CARRIERS' ASSOCIATION
ROCKEFELLER BUILDING
CLEVELAND, OHIO 44113
(216) 621-1107

August 27, 1979

U. S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources Branch
P. O. Box 1027
Detroit, MI 48231

Subject: Draft Supplement to the Operation & Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan - July 1979

Gentlemen:

Lake Carriers' Association, representing the United States flag Great Lakes bulk carriers industry, has carefully reviewed the above captioned document.

In essence, the Corps advocates a limited season extension to approximately January 8, 1980, plus or minus one week. We agree that extending the navigation season and appropriate mitigative measures associated with it are integral to the social and economic well-being of the Great Lakes Basin population and the nation as a whole.

As stated in the Supplement Report, the importance of the locks and the St. Marys waterway to the nation's economy is clearly demonstrated by the fact that two-thirds of the iron ore produced in the United States and Canada is shipped via this facility.

The benefit/cost ratio of the selected plan amply demonstrates that the proposed limited season extension is justified, particularly in view of the fact that the studies of environmental

1. Agreement with the proposed extension is noted.

impacts clearly demonstrate that extended lock operations as proposed would not cause unacceptable adverse impacts on the environment.

In analyzing the Supplement Report, however, we can see no significant difference in extending the navigation season to January 8, 1980, plus or minus one week, and extending the season to January 31, 1980, plus or minus two weeks. Examination of the Interim Feasibility Study, Great Lakes-St. Lawrence Seaway Navigation Extension, does not reveal that additional mitigative measures, such as additional construction to prevent shoreline erosion and shoreline structural damage, is either necessary or justified. Extension to January 31, 1980 would mean that the duration of the navigation season would extend about three weeks beyond the selected plan. The conclusion that this three weeks extension would require special construction to prevent shoreline erosion and shoreline structural damage is purely speculative.

2

This fact is recognized by the amendment to the Committee print of H.R. 4788 now pending before the Congress. That amendment specifically does not authorize any construction to mitigate shoreline damage referred to in the Report of the Chief of Engineers dated November 16, 1977 but instead directs the Secretary of the Army to study possible damage to shoreline and shoreline structures that may have resulted from winter navigation activities on the Great Lakes.

3.

Since 1967 there has been no closing date earlier than December 31. From 1974 through 1979 the lock facilities have been

2. Please refer to Section II, paragraph 2.01, where the alternative of extending the season to 31 January is discussed and eliminated. Shoreline erosion and shore structure damage are among a number of other concerns identified as requiring additional information and mitigation. The proposed extension, to 8 January with factors to be considered for lock closure, is identified as a minimal damage period (refer to Section I, paragraph 1.08).

3. Studies such as those proposed for shoreline damage would contribute to information needed to assess impacts. Information obtained would be used by the Division Engineer for determining lock closure dates in the future.

in operation through March 31. No adverse impact on the environment has been demonstrated during this lengthy period. At most, the residents of Lime Island and Sugar Island have been somewhat inconvenienced but these problems have been largely resolved. Corrective measures, such as the provision of an airboat, the installation of ice booms and bubbler system where appropriate, and icebreaking assistance have satisfactorily handled these problems. On balance, we believe the reasonable demands of commerce justify extending the navigation season to January 31, 1980, plus or minus two weeks. The Supplemental Environmental Impact Statement fully demonstrates that this additional three weeks extension has no significant adverse impact on the environment or the residents of the Sault Ste. Marie, Michigan area.

Further, there is no reasonable alternative to extended season navigation for the essential transportation of iron ore. During the period from January 8, 1980 through April 15, 1980 the railroads simply do not have the rolling equipment necessary to handle the quantity of iron ore that needs to be transported during that period. For example, it is interesting to note that the average ore tonnage moved through the locks in January the past three years is 1,286,585 net tons. To move this amount in 70-ton hopper cars would require 6,127 cars, assuming a 10-day turn around. It is apparent that available rail capacity can handle only a small portion of this volume .... at a considerably higher cost and higher

4. The lack of baseline information is well established. Although no adverse effects have been observed during the demonstration period, means of evaluating potential effects do not exist where quantification is desirable.

5. Stockpiling appears to be the currently viable alternative to the handling of quantities cited. This is discussed and evaluated in Sec. IV. As is addressed in the operation regulations, emergency situations can warrant opening the locks at any time if the need can be demonstrated and practicable alternatives do not exist.

energy consumption. The rail system, including the roadbed, is not and was never geared to handling this movement. Considering the available stockpiles and no other alternative to water movement, commerce has no choice but to operate into the winter, as outlined in our letter dated May 23, 1979. In addition, Canada also moves needed energy products during that period to Lake Superior ports. Consideration should be given to Canadian cooperation with the United States on energy supplies, including pipeline routes, and other national policy matters. 5.

6.

Finally, reinstallation of the ice control boom in Soo Harbor will have beneficial effects to keep ice out of the Sugar Island ferry slips and also help to prevent flooding of the Soo Harbor and possible loss of the power plant such as occurred when there was no winter navigation. 7.

The Supplemental Impact Statement asserts, however, that operation cannot be extended beyond the selected plan if authority or funds are not available for the provision of lock operations and certain mitigative measures. Moreover, the Report states that, because of additional required mitigative measures, the navigation season cannot be extended to January 31, 1980, plus or minus two weeks, without formal Congressional authorization. We respectfully disagree. 8.

9.

These assertions are made despite the fact that the studies made to date clearly establish that such ...ided local operation would not cause unacceptable adverse impact on the environment. 10.

6. Coordination and cooperation exist through the respective Departments of State and International Joint Commission control groups.

7. Concur. This is recognized as a mitigating action having beneficial effects even if navigation does not proceed.

8. It is recognized that operation and funding to 31 January are authorized (Sec. 1) for lock operations and certain mitigative measures.

9. Extending navigation to 31 January, as described in Interim I Survey Report would, in the Corps' opinion, require further study of mitigation measures to protect the riparian interest. Another major consideration is for environmental information/studies which have not been accomplished. Extension to 8 January, utilizing factors to be considered for an earlier lock closure in the Operations Plan for this segment of the system provides a reasonable basis for denying the need for major mitigative measures.

10. Please refer to Response 4, above.

We conclude that extension of the navigation season to at least January 31, 1980, plus or minus two weeks, is permissible under existing legislative enactments. The Corps of Engineers derives its initial authority from Section 4 of the Act of August 18, 1894 (33 U.S.C. Sec. 1). That Act provides that:

> "It shall be the duty of the Secretary of the Army to prescribe such regulations for the use, administration and navigation of the navigable waters of the United States as in his judgment the public necessity may require ..... "

Thus, as reiterated in the Corps Main Report:

> " ..... existing Federal legislation does not prohibit winter navigation on the Great Lakes-St. Lawrence Seaway System."

The only issue is the feasibility of the means of extending the navigation season beyond the usual eight and one-half month season in light of the reasonable demands of commerce.

That conclusion seems to be corroborated by the Office of Management and Budget in its letter of March 9, 1979 to the Secretary of the Army. It is therein stated on Page 2 of that letter:

> "We believe a decision on the need for additional, and separate, appropriations for each Federal Agency is premature. First, with regard to additional appropriations, although the costs of the Navigation Season Extension have been documented, it is not clear that all of the extension activities would call for additional appropriations above existing levels at this time."

It is further stated on Page 2:

> "Because the Navigation Extension measures would consist primarily of operation and maintenance

11

11. Concur that the Corps does have the necessary authority. However, other laws require consideration of more than the reasonable demands of commerce. Appropriate mitigation measures must be undertaken if the season is to be extended beyond the 8 January time frame. Need for mitigation has been adequately identified, but sufficient funds have not been received to accomplish the necessary studies and measures. It would seem irresponsible to continue causing substantial damage to riparian interests with no means of mitigation in the absence of an emergency.

activities, unlike traditional Corps of Engineers capital construction projects, and further, involve actions primarily by other Federal Agencies, we do not believe it advisable to seek authorization for the January 31 Season Extension in the manner and format of the usual Corps of Engineers construction project report."

Pursuant to existing legislation the Corps of Engineers has promulgated regulations governing the opening and closing to navigation of the locks at Sault Ste. Marie, Michigan. 33 C.F.R. Section 207.440 provides for a closing date of December 15 but, if requested by the using interests, the closing date may be extended to meet reasonable demands of commerce to the extent that weather and ice conditions permit. Long before the winter demonstration program was authorized the locks were kept open as the reasonable demands of commerce required. In fact, in prior years navigation did not close during winter months because of weather or ice conditions but because it was not practical to handle frozen cargoes of iron ore, coal and grain. The development of taconite pellets in Minnesota and Michigan has changed all this and now makes winter operations feasible. The potential benefits and economic savings resulting to the nation from extension of the navigation season fully justify navigation through the Soo Locks to at least January 31, 1980, plus or minus two weeks.

12.

It is recognized that the National Environment Policy Act of 1969 (PL 91-190) requires an environmental impact assessment of projects in an operation and maintenance status. This the Congress

12. Economic advantages to season extension are well documented. Under NEPA, equal consideration has been given to protection of th environment. Quantification of these elements of the decisionmaki process has been at an early stage of development and requires additional time to secure. This effort is in progress and must be resolved.

has done. The Corps' own assessment indicates that the effects of the O & M project involved here are too insignificant to warrant limitation of the navigation season before January 31, 1980, plus or minus two weeks. It is the view of the Great Lakes vessel industry that additional legislation is not necessary for navigation to continue through the Soo Locks into winter months to meet the reasonable needs of commerce. However, legislation is urged to permit appropriate environmental monitoring and to authorize such mitigative measures as may be found necessary as a result of such monitoring.

13.

Respectfully submitted,

Paul E. Trimble
Vice Admiral USCG (Ret.)
President

13. The Corps does not concur at this time that environmental and social effects of the O & M project are too insignificant to warrant limitation of navigation before 31 January. This well may be the conclusion reached at some later date when environmental concerns are answerable with specific information on resources potentially affected. However, the need for mitigation of damage to shoreline structures has been well documented. Such measures have been formally requested by the Governor of Michigan and the Regional Administrator of Region V of the U.S. Environmental Protection Agency.

Lake Huron Property Owners' Association

Box 42
East Tawas, Michigan 48730

July 1, 1979

U. S. Army Engineer District, Detroit
Attention: Chief, Environmental Resources Branch
P. O. Box 1027
Detroit, Michigan 48231

Gentlemen:

We wish to go on record opposing the extension of the winter navigation season beyond December 15th.

The cost to the taxpayers is reason number one. In your draft of July 1979 you speak of an additional cost of $166,240 per week to operate beyond December 15th. Nowhere in the draft can we find the cost of operation of the fleet of U. S. Coast Guard boats now in operation or for the ice breakers on order. We see the chief benefactors being the shipping, steel and stockholders. 1.

Secondly, we oppose the extension of winter navigation on the possible oil and hazardous substance spill at the foot of Lake Huron and head waters of the St. Clair River at Port Huron where the water intake for the city of Detroit is located. The city of Detroit sells water to all of the industrial and municipal complexes of the southeastern area of the state of Michigan, including Flint. Every city of the Great Lake could suffer from such a spill off their shore. 2.

Last winter there was a small spill in Saginaw Bay near Bay City by a tanker making a trip to a dock in Bay City. The tanker suffered a broken hull plate bucking the ice fills of Saginaw Bay. On the numerous trips this past winter she had the help of U. S. Coast Guard ice 3.

1. Additional operating costs are offset by benefits accruing as result of extended operations. Operation of icebreakers is a Coa Guard decision and is not a cost component of lock operations (Se III and Sec. V). The distribution of benefits is discussed in Section I and IV as well as in the March 1979 Survey study.

2. Please refer to our response to Comment #17 of the U.S. Department of the Interior and to Sec. IV describing actions to b taken to pervent and contain oil spills.

Oil and hazardous substances will continue to be shipped during t winter whether or not the locks are open. No law prevents such shipments in Lakes Michigan, Huron, Erie, or Lake Superior. Clos the locks only constrains such shipments from passing through the Marys River.

3. Please refer to the response to Comment 2. Costs and benefit are computed on a seasonal basis where assistance and non-assista provide an average cost or net cost. The case referenced could n be considered typical or significant when assessing the entire program.

...company that the liquid was ...irment at a low cost but an ...ers.

...concerned about the economy of the ... the nation but also feel the Great ... nation's wonders and must be protected.

Sincerely,

Robert H. Marsh

Robert H. Marsh
...dent

...onorable William G. Milliken, Governor
Capitol Building
Lansing, Michigan 48903

U. S. Senator Donald Reigle
U. S. Senate Building
Washington, D. C. 20515

Rep. Robert W. Davis
House of Representatives
Washington, D. C. 20515

Mrs. Lee Botts, Chairman
Great Lakes Basin Commission
P. O. Box 999
Ann Arbor, Michigan 48106

Dr. Dorothy Brooks, Chairman
Michigan Shorelands Advisory Council
Department of Natural Resources
Steven T. Mason Building
Lansing, Michigan

Mrs. Mimi Becker
Great Lakes Tomorrow
P. O. Box 1935
Hiram, Ohio 44234

3.

COMMENTS OF THE MICHIGAN UNITED CONSERVATION CLUBS

RE: LIMITED WINTER NAVIGATION THROUGH SOO LOCKS

U.S. Army Corps of Engineers - Detroit District
"Supplement to Operations and Maintenance
Environmental Impact Statement
of the Federal Facilities at
Sault Ste. Marie, Michigan
Addressing Limited Season Operation Extension"

August 17, 1979

These comments are submitted on behalf of the Michigan United Conservation Clubs regarding the above referenced document. The position of the Michigan United Conservation Clubs regarding a navigation season extension on the Great Lakes is well known to the Corps. We recognize that this supplement has been prepared under unusual circumstances; it is not clear at this writing what action the Congress will take regarding the Corps' recommended "interim" extension until January 31, plus or minus two weeks.

MUCC has testified to the U.S. House of Representatives (Subcommittee on Water Resources) in opposition to the interim extension (statement attached). We will be providing similar testimony to the U.S. Senate in hearings in Michigan this fall.

In the event that Congress does not approve this interim extension or takes no action, there remains the question of when the locks should close. It is our position that this closing date should be flexible based on weather conditions and environmental criteria, yet to be established. In the absence of environmental studies, any determination of closing dates will be somewhat arbitrary. In the absence of environmental studies sufficient to determine acceptable threshold levels of environmental damages, it is our position that a closing date requiring no mitigating action is the only legal option available to the Corps. Therefore, we support Alternative 2, an extension of the season to approximately December 25, depending on when the Lime Island ferry is no longer able to traverse the river.

Neither this document, nor those documents referenced for supporting information (pp. I-4 and I-5), provide sufficient documentation to satisfy the National Environmental Policy Act of 1969 to support major federal expenditures for lock operation, ice breaking assistance, or mitigating measures. 2.

The proposed federal action would allow the locks to remain open "until impacts on local communities or the environment become substantive, and appropriate means of mitigation are not available." Who will determine what the terms "substantive" and "appropriate" mean? What criteria will be used to determine threshold levels of unacceptable damages? These questions are not answered in this draft document. 3. 4.

MUCC

2101 WOOD ST. P.O. BOX 030 LANSING, MICHIGAN 48909 (517) 371-1041

I-55

1. We concur that the closing date should be flexible and based upon weather and ice conditions. Studies of weather and ice conditions (from severe to mild winters) have been used to establish the January 8 date. Please refer to Comment/Responses, U.S. Department of Commerce, Maritime Administration, Comment 1.

however, the adoption of the no-mitigative measure alternative - Alternative 2 - would forego both economic and social benefits which would be derived from the mitigative measures. For example, use of the ice boom during the Demonstration Programs (FY 1976) showed definite positive effects in alleviating ice jams in the Little Rapids Cut area.

A comparison of the economic benefits shows that extension to 25 December would yield an average annual benefit of $2,037,700 while extension to 8 January would yield an average annual benefit of $4,402,000, an increase of $2,364,300.

Please refer to responses to comments made by the U.S. Department of Interior on the provision of factors to be considered for closure decision based on a minimum damage phase of operations, and to Section VI on coordination with FWS on similar concerns.

2. Documentation of facts has been increased throughout the report in accordance with NEPA. Whenever possible significant information has been supported by cited references from verbal conservations and written texts.

Where essential information is needed, studies have been and are continuing to be identified for obtaining this information (See Appendix G). NEPA does not require exorbitant expenditures for obtaining data where such data is necessary for a precise definition of impact. Where costs are exorbitant and data is not obtained, "worst case" analysis is required, and that is what is presented in this document.

3. The Interim Winter Board would coordinate the operational extension of navigation to allow the locks to remain open to a "minimum damage" stage (see Section I). This procedure has been developed through coordination with the members of the Interim Winter Board. "Appropriate means" of mitigation include those recommended in Interim No. 1 Survey Report for preventing damage to riparian interests, and any other mitigation measure which might be identified as necessary by another agency.

4. This information is included in Section I containing factors to be considered for a closure decision and is included in the St. Marys River Operational Plan. The character of impacts typically begins to change as vessels begin to experience difficulty in transitting the river. To overcome the difficulty requires icebreaking support and the increased horsepower usage, both of which are primary factors in causing impacts. This condition has been related to the "when to stop" criteria.

The proposed federal action is contingent upon the availability of authority and funding for mitigative measures. What permits and authority are required by law? Page I-3 states that lock operation would be terminated earlier if such funding is not available based on ice interference with "ferry service." Does this refer to the Sugar Island ferry or does it also include the Lime Island ferry? | 5 | 6

ENVIRONMENTAL IMPACTS:

Page IV-3 (para. 4.09) focuses on the core of our argument against the proposed federal action: "Studies of these [environmental] impacts show that extended lock operation as proposed would not cause unacceptable adverse impacts to the environment." Section IV then generally lists and subjectively describes the anticipated environmental consequences of this action. | 7.

The "studies" referred to are in fact non-existant. Virtually no studies have been completed; certainly insufficient to document the above cited conclusions. We would like to know specifically what studies are being used to justify this conclusion. | 8.

This documentation is critical, since a simple listing of anticipated impacts in no way satisfies NEPA.

The document notes that an extended season to January 3th, plus or minus one week, will contribute to shoreline erosion and sediment transport due to "movement of ice in contact with vessels, propeller wash, drawdown and surge and ice control structures." There will be a "temporary influence on river hydraulics." The artificial formation of sub-ergid ice ramparts could alter existing water currents and affect circulation patterns." Numerous adverse impacts to the benthic community are noted. Impacts of fish spawning "could" occur. | 9

What is the significance of these impacts? Where is the documentation to justify the Corps's sanguine conclusions? How do you intend to mitigate damages if no baseline data, no continous monitoring, and no quantification of damages is available? Paragraph 4.50 states that damages to benthic communities will occur, but that "recolonization could occur in the same manner as it has over past seasons of extended navigation during mild winters." | 10

Where is the documentation that recolonization has, in fact, occurred? It is our contention, based on observations of our staff and long-time residents along the St. Marys River, that system-wide impacts to the benthic community have occurred and that this proposed federal action will continue to unnecessarily impair the benthic productivity of the river. These observations are no less valid, no less scientific than the justification provided by the [illegible] support of its conclusions. | 11.

But the burden of proof to show adverse environmental impacts does not rest with us. We are not proposing the action. We are not the agency charged with satisfying the letter and intent of NEPA. The U.S. Army Corps of Engineers is.

Comments by the U.S. Department of the Interior on the draft survey report are germane to this document as well: "The environmental studies which have been conducted to date have been limited in scope and considered only a few site specific demonstration projects--these studies were not designed to address the implementation of an operational phase of winter navigation. There has been no evidence generated to date to conclusively indicate that a season extension can or cannot be accomplished in an environmentally acceptable manner." (July 19, 1979) | 12

Furthermore, preliminary work coordinated by the Great Lakes Basin Commission for the Environmental Evaluation Work Group, FY 1979 Studies of the Winter Navigation Demonstration Program, provide no reassurance that even this limited season extension will be environmentally acceptable | 13

5. The Division Engineer has the authority and funds for placement of the ice boom system. No permits are required. The other measures would have to be provided by some other entity, possibly the industrial users.

6. This statement is found both in paragraph 1.08 and 1.09 and refers to both the Lime Island and Sugar Island ferries. Since authority and funding are not available for the necessary vehicle and bubbler system, these items must be furnished by some other entity if navigation is to proceed as stated.

The apparent contradiction in these two statements has been clarified in Sec. IV of this document. The primary action, extended lock operation, is expected to have no significant adverse effects. The consequences considered are the secondary effects which could have adverse effects. However, the factors developed for closing the locks at a "minimal damage point" have been identified in part as "550 freezing degree-days." See Sec. I for detailed information.

8. The conclusion of no unacceptable adverse impacts is based in part upon results of studies. The Environmental Evaluation Work Group (FY 1979 Studies of the Winter Demonstration Program) contracted studies through the Great Lakes Basin Commission. Final results and conclusions of these just recently completed studies are incorporated in this document with appropriate referencing. Studies are identified where significant effects have been investigated. A complete listing of referenced studies has been included in Appendix L. Because of the short duration of this period of extension, other effects identified are considered minimal and studies, therefore, unwarranted. Studies conducted under the operational program would provide essential information rather than baseline data. A major baseline data acquisition as proposed for the year-round extended season program is considered unreasonable for a 3 to 4 week extension as proposed.

9. These statements are taken out of context. In each case the shortness of the extension and early season ice conditions are considered as a reasonable basis for negating minimal environmental effects. This is not documented by any one specific study. The rationale for these conclusions is provided in Section IV. As required by NEPA, a "worst case" analysis has been presented where information is lacking for a definitive assessment. This type of analysis is largely responsible for the apparent inconsistencies in descriptions of impact.

10. Factors considered for a closure decision have been established to identify the minimal damage point and to negate the requirement for mitigating damage. However, mitigative measures based on identified adverse effects would be included.

11. Please refer to Sec. IV regarding effects on benthic communities.

12. Please refer to Comments, with Corps responses, made by U.S. Department of Interior related to this document.

Evaluation of Benthic Dislocation Due to Pressure Waves Initiated by Vessel Passage in the St. Marys River (July 31, 1979) concludes that a displacement of 0.1% of the existing benthic population per one meter length of ice surface crack per vessel passage is "insignificant." We question that conclusion; nevertheless, the report also notes that the study did not include the "possibility that subsurface dislocation and disruption of the benthic ecology does exist."

Effects of Winter Navigation on Waterfowl and Raptorial Birds in the St. Marys River Area (June 15, 1979) notes that "indirect effects such as the influence of ship-caused turbidity on duck foods or the scouring action of ice pushed by ships on vegetation were not assessed. A serious potential impact of winter shipping is the possibility of spillage of oil or toxic materials."

Ship-Induced Waves - Ice and Physical Measurements on the St. Marys River (July 19, 1979) concluded that "there is no ambient sediment transport during the period of continuous ice cover," but that vessel passages "will cause bottom sediments to be translocated."

Effects of Ship-Induced Waves in an Ice Environment on the St. Marys River Ecosystem (Draft, July 7, 1979) concludes that "an unequivocal demonstration of effect (or no effect) would have required analysis of additional samples to improve the power of ANOVA, and probably also the collection of additional unaffected baseline data during a winter or series of winters when there was no vessel traffic in the study area.... The significance of the observed vessel induced drift cannot be demonstrated with the available data. However, the biota and detritus represented in the drift net catches may constitute an energy resource that is important to production in the portion of the St. Marys River covered by the study. The accelerated transport of this material through the system in winter, when production approaches the annual minimum may result in a considerable energy loss to the portion of the system from which the drift material was transported."

In addition, several of the studies note that the winter characteristics and vessel passage frequency were not characteristic of the previous several winters.

The possible environmental damages from this proposed federal action could be of the same order of magnitude as damages we fear from an all-winter extension, regarding risks of oil and chemical spills. A major spill on January 15 could be just as devastating to the river environment and the local economies as one occurring on February 14. Paragraph 4.09 cites the "Oil Recovery Strategy" referenced in the Draft Survey Study. You have our comments on that document and we will not repeat them here, other than to suggest a more appropriate title would be "Oil Non-Recovery Strategy."

A recent publication on the technologies of oil spill cleanup in cold weather makes it clear that effective clean up techniques do not exist to protect the St. Marys River: "The physical containment and recovery of oil spills in inland waters during cold weather conditions offers an enormous challenge to people engaged in oil spill research and emergency response in many parts of the world. Some very meaningful field tests, training exercises, and actual spill-response activities have begun to shed some light on the subject" (emphasis added) [Allend, A.A., Cold Weather Techniques, Ecolibrium 8(3): 10-14, Shell Oil Co.]. The St. Marys River is not an experimental laboratory; we do not want to be the guinea pig for a test of unproven oil clean up techniques.

Finally, we would bring to your attention a statement made by Brigadier General Hugh Robinson, Deputy Director of Civil Works, Corps of Engineers, at the National Conference on Ports and Coastal Management in Boston on July 31, 1979: "There is no intent to move forward with that project [winter shipping] until all the environmental questions are answered." This proposed federal action is certainly a part of "that project" and we would like to take his statement at face value.

13. Concur. However, preliminary work was not intended to provide this reassurance. On the other hand, studies to date have also not indicated that any extension would be unacceptable either. Investigations have provided useful information and would be the basis for more specific inquiry and study focus. Environmental acceptability is presently based on not extending navigation beyond a point of minimal damage. This is discussed in Sec. IV.

14. Please refer to response 26, to comments of U.S. Department of Interior, FWS shares your concerns for oil spill risk, contingency planning and cleanup capability. Also, please review the additional material in Appendix D showing the low volume of such materials shipped through the locks in winter.

15. The Corps is adding containment and cleanup equipment for oil spill recovery at the Soo Locks as a part of its emergency preparedness program. This would be available to the Coast Guard if required, for other areas of the river, for which the Coast Guard is responsible. Please refer to response 26 of the U.S. Department of the Interior on this subject.

16. The referenced remark concerned the feasibility of extending winter navigation (the Survey Study), which begins with 31 January. It should be noted that a recent decision by the Secretary of the Army (and supported by OMB) considers the extension of navigation up to 31 January to be within the operational authority of the Corps.

MICHIGAN UNITED CONSERVATION CLUBS
2101 Wood St ● P O Box 30235 Lansing, MI 48909 ● 517-371-1041

STATEMENT OF THE MICHIGAN UNITED CONSERVATION CLUBS
Navigation Season Extension on the Upper Great Lakes" S. 703

Subcommittee on Water Resources
Environment and Public Works Committee
June 12, 1979

You have before you today a recommendation from the U.S. Army Corps of Engineers to provide a federal guarantee of a navigation season extension on the upper four Great Lakes until January 31 each year (plus or minus two weeks depending on the weather), starting next winter.

The 100,000 members of the Michigan United Conservation Clubs, the 430 affiliated clubs and organizations we represent, are solidly opposed to this. We want Congress to hear it clearly -- we don't want winter navigation.

We don't want to pay for it. We don't want it tearing up our environment. We seriously question the propriety of giving the steel industry such a tremendous subsidy.

We are the people in the midwest this is all supposed to benefit -- the public. That public does not want winter navigation.

Opposition to this program is far more intense than what the Corps has told the Congress. In Michigan it includes counties, townships, planning commissions, cities, local politicians, unions, railroads, ferry companies, newspapers, (including both Detroit dailies), civic and conservation groups, and thousands of citizens directly affected by this project.

Our state is surrounded by the Great Lakes, the greatest fresh water resource in the world. We are convinced that the threat to the natural resources of the Great Lakes from winter shipping is serious and must be thoroughly studied before the winter shipping is authorized by Congress. Those studies have not been made.

The Corps has advanced some attractive arguments regarding the economics benefits of winter shipping. But a recent draft report of the Great Lakes Basin Commission prepared at the request of Michigan Governor William G. Milliken politely picks apart virtually every economic claim and assumption made by the Corps. To cite one example, a conservative estimate (is that) three-quarters of the benefits attributed to the stockpiling of iron ore in the Corps' report may not be valid.

Who will receive the benefits that do occur? During the 1977-78 winter demonstration program, 9[illegible]% (by weight) of the U.S. cargo shipped was iron ore. Only twelve U.S. companies used the system, with U.S. Steel Corporation the primary beneficiary. Like me, I'm sure what you are considering is a multi million dollar tax subsidy to the steel industry, with some spill over benefits to a few other industries such as coal and Canadian wheat.

Where does the Canadian government come out in all this? Canada is not likely to object to the interim authorization before you for the upper lakes. During the 1977-78 demonstration program 20% of the tonnage shipped was Canadian with the costs of the program paid by the U.S. taxpayer. But we have seen no indication of support from Canada for a season extension on the St. Lawrence Seaway.

17.

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19.

20.

17. Due to concerns over the proposed time frame, the sequence of events defining successive periods contemplated for extending winter navigation are described in this document. Environmental studies considered essential for the present period of extension (to 8 January ± 1 week), have been identified (Appendix D)(See comments made by Department of the Interior, with responses by the Corps). Studies for other time periods have been defined in other documents.

18. The GLBC study was not uniformly negative in its findings. Several understatements of savings are noted, as well as overstatements. The method of estimating stockpiling benefits is being revised in response to the GLBC study. GLBC has recommended (in their FY 81 Priorities Report) an extension to 31 January in the upper lakes. As the "bottom line," the GLBC report did not find the claimed economic benefits to be less than the projected costs, supporting the Corps findings of a positive net benefit.

19. To date, the steel industry has been the primary beneficiary. However, related benefits ultimately accrue to the general public in terms of reduced transportation costs, reduced seasonal unemployment, reduced inflation and energy consumption. Please review the tables added to Section IV for a better perspective on commodities and users.

20. The period of extended navigation proposed would only concern the upper Great Lakes. Season extension on the St. Lawrence Seaway is discussed in the Survey Study where coordination with Canada is recognized, considered, and proposed.

The "interim extension" envisioned in S. 703 cannot be viewed separately from more ambitious efforts to re-tool the entire system for year-round commercial shipping. Without that extension on the Seaway, most of the ultimate benefits claimed for winter navigation evaporate. 21.

There are very real costs of this program which have not been seriously considered or computed. What will this mean to the railroad industry of the midwest? It is really in the national interest to subsidize diversion of traffic from rail to water? What is the cost to the tourist industry of the Great Lakes? The economic value of the sports fishery of the Great Lakes is over $250 million annually in Michigan alone. 22. 23. 24.

Finally, the proposal you are being asked to authorize is illegal. It is clear that the National Environmental Policy Act of 1969 has not been satisfied by the environmental statement prepared on the project. No serious environmental studies have been done in the eight-year history of the demonstration program. We do not relish the thought of litigation on a program of this magnitude, but the pressure in Michigan to stop winter navigation will insure court action if necessary. Our commitment to the conservation and wise use of our natural resources would leave us no alternative. 25

We have lived through eight years of demonstration winter shipping. This program has brought severe disruptions to the lives of citizens along the connecting waters of the Great Lakes, particularly island residents. It has seriously damaged shorelines and private property, destroyed natural resources, impaired local tourist economies according to resort owners, and brought unacceptable threats of oil and chemical spills under ice in connecting rivers. And now you are being asked to institutionalize these problems on a permanent basis. 26.

21. The March 1979 Survey Study shows benefits expected for each incremental extension of the navigation season. Substantial benefits accrue from incremental season extension on the upper Great Lakes alone. Each increment must be cost effective or it cannot be undertaken.

22. The purpose of the entire program is to determine the relationship between season extension and the national interest. The impact on other modes of transportation such as rail has been addressed in the Survey Study. However, it should be kept in mind that negative impacts to overland modes of transportation, if any, are not considered a cost to this program. Negative benefits to overland modes of transportation are not included in the benefit-to-cost ratio. While one sector of the economy (or society) may gain while another loses, there is no net loss to the economy, or the country as a whole.

23. It is considered to be in the National interest to improve the net efficiency of the Nation's transportation systems. Such improvements contribute to the total productivity of the Nation's economy.

24. The proposed extension is expected to have no measureabl impact on the tourist industry. In spite of navigation beyond 8 January since 1969, Michigan's sport fishery has continued to increase in value. Several studies have been conducted on the effects of winter navigation on recreation for the Survey Study. These studies identified key harbor areas and connecting channels where winter recreation activities occurred, and identified concerns relative to the year-round winter navigation program. Aside from the obvious effect of weakening ice in the vicinity of the channel, and perhaps weakening ice further away, the primary concern was over the possible disturbance of the water near fishing areas. However, it was concluded that these impacts are relatively minor, and to date, no disbenefits have been identified which would substantially alter the benefit/cost ratio of year-round navigation. Additional studies have been proposed (in the Environmental Plan of Action (EPOA) for the Survey Study) to investigate further all impacts of winter navigation on winter recreation, to include the economic impact on the recreational industry within the Great Lakes region. Of course, a major impact would result if winter navigation affected the fisheries resource. If this did occur, then tourism industry could be affected, both winter and summer. However, a major effect on the fisheries of the Great Lakes region is not expected to result from this short extension of winter navigation.

25. The statements in this comment concerning interpretation of legality and satisfaction of NEPA are not in agreement with the Corps position in this matter. Many serious studies, at the cost of millions of dollars have been undertaken. Certainly litigation is an option available to MUCC should that be the course chosen to challenge the conclusions of the Corps.

Page 4

Statement of MUCC Re: Navigation Season Extension on the Upper Great Lakes S.703

In light of the widespread taxpayer opposition to winter navigation and the serious unanswered economic and environmental questions, we recommend that no navigation season extension be authorized. Nothing less than the future of the Great Lakes is at stake.

Presented by: Thomas L. Washington
Executive Director
Michigan United Conservation Clubs

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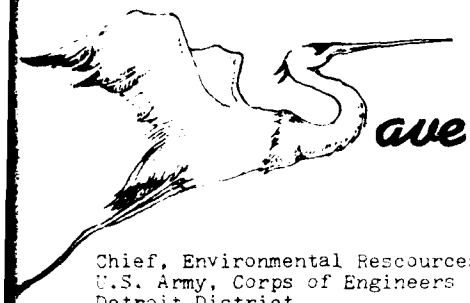
applicable to the limited period of extension proposed at this time. Other aspects of these problems are discussed in the Survey Study in appropriate sections as related to year-round navigation extension. Mitigative measures have been taken to solve certain problems as defined while others are noted in the EPOA (for the Survey Report) with appropriate actions recommended. Problems related to oil and chemical spills should also be referred to the U.S. Coast Guard which has primary responsibility for their solution.



Save The River!

July 20,1979

Chief, Environmental Rescources Branch
U.S. Army, Corps of Engineers
Detroit District
P.O. Box 1027
Detroit, Michigan 48231

District Engineer:

Save The River has reviewed the Draft Supplement Environmental Impact Statement for Operation and Maintaince of the Locks at Sault Ste. Marie to be extemded to January 8, and we wish to make a couple of comments.

By extending the operation of the locks, in effect, the entire navigation season will be extended to the above date. While this fact is mentioned in passing, the report does not address impacts to the four upper Great Lakes which will be affected if this plan is implemented. It is these locks and the St. Mary's River where navigation is mostly constrained in the winter months. Therefore, we find this assessment to be too limited in scope, by not adressing the impacts to the Lakes, and to be misleading to the general public. Since in our opinion, extension of the operation of the Locks is an incremental step in extending the navigation season, the Draft Supplement does not conform to the requirements of N.E.P.A. by discussing the full implications of extending lock operations.(see Rodgers Environmental Law,1977, p. 787-792.) We suggest that the District Engineer request an environmental impact statement which deals with impacts to the entire region affect by the proposed action. This would include Lakes; Superior, Huron, Erie, and Michigan. Untill such a study is accomplished within the framework of NEPA, we must object to implementation of the navigation season. 2.

As to the actual impacts to the St. Mary's River, obviously they would be limited compared to extension for all year round or Jan.31. However, the report states some impacts may occur as a result of stretching the season and these impacts seem to have much of the qualitative substance of year round extension. Because of this fact, it is our view, that no action to extend the season be taken, untill all feasible alternatives be explored, including non-waterborne transportation models. Whether, the season is extended for one week or 3 months, the environmental impacts should be properly adressed. It should be pointed out, the Committee has never received the Draft Report, just the supplement. If you would care to send us a copy, we will be glad to review that as well, and make additional comments. We recognize, that the supplement 3.

SAVE THE RIVER COMMITTEE BOX 322, CLAYTON, NEW YORK 13624

1. This EIS is written to address the operations and maintenance of the Federal facilities at Sault Ste. Marie, Michigan, and, therefore, concentrates on the direct impacts to the St. Marys River System. A general discussion on effects of winter ship transit is found in Section IV of the EIS--Secondary Impacts have also been added to the Final document. Further discussion concerning the effects of winter navigation on the lakes can be found in the Draft Survey Study for Great Lakes and St. Lawrence Seaway Navigation Season Extension, March 1979 (Detroit District Army Corps of Engineers), which was incorporated in the Draft Supplement by reference.

2. Please refer to responses made to comments of the U.S. Department of the Interior, in this Section.

3. Please refer to additional information on alternatives in Sec. II. The environmental impacts of the operational period, defined by extension to minimum damage phase with factors to be considered for a closure decision are properly addressed. The Draft Report has been forwarded to Save the River for information.

does not fully discuss the proposed plan and it's impacts. However, it is all the information we have.

To conclude, it has been the position of Save The River concerning any extension of the navigation season on the Great Lakes-St. Lawrence system, to insist on proper environmental studies in compliance with NEPA, and that no actions be taken to extend or modify any or all of the system untill a comprehensive discussion of all aspects of the entire Great Lakes Basin is completed. This EIS does not address the full implications of season extension, and therefore, we must recommend that the proposed plan not be implemented at this time.

Sincerely,
Richard Spencer
Save The River, inc.

W B HRMANN
GENERAL MANAGER
LAKE SHIPPING

United States Steel Corporation
LAKE SHIPPING
400 MISSABE BUILDING
DULUTH, MINNESOTA 55802
218/722-2401

July 30, 1979

U. S. Army Engineer District, Detroit
P. O. Box 1017
Detroit Michigan 48231

Attention: Chief, Environmental Resources Branch

Gentlemen:

In response to the Draft Supplement to the Operation and Maintenance Environmental Impact Statement for the Federal Facilities at Sault Ste. Marie, Michigan addressing Limited Season Extension of Operation dated July 1979, the following response is offered for consideration in the preparation of the Final Supplement.

As a consequence of our long, direct participation in the Navigation Season Extension Program on the Great Lakes, we have reviewed the subject EIS and the proposed operation alternatives with considerable interest and concern. Although we agree with the general conclusion that extended season navigation on the Great Lakes does not pose unacceptable environmental impacts to local communities or the environment for the selected plan of extending lock operations to approximately January 8 plus or minus one week, it does not necessarily follow that season extension beyond that point would result in adverse, unacceptable impacts. In fact, based on our extensive operational experience, we have not observed any significant adverse environmental impacts associated to Navigation Season Extension.

As it is clearly and quite logically outlined in the Main Report of the March 1979 Survey Study for Great Lakes and St. Lawrence Seaway Navigation Season Extension, an "adaptive method" which would coordinate the period of extension with climatic conditions, ice cover, environmental effects and other pertinent factors would be a far more appropriate course of action to follow in securing the benefits which are the objective of the pro... Instead of setting an arbitrary termination date based on historical data which may not relate to a specific year's conditions, operation of the docks and support facilities should proceed through a flexible, adaptive approach which permits commercial activity to continue until ice conditions, weather, or other established criteria preclude

1.

1. Operation of the locks is currently based on a flexible schedule dictated by weather and ice conditions. The proposed extension to 8 January ± 1 week also maintains this condition "to the extent that weather and ice condition permits." Please refer to Sec. I of this document for factors to be considered for lock closure. Extension beyond this time frame can be expected to produce damages which currently cannot be mitigated. If and when the Survey Report results in authorization, the adaptive approach would be followed.

United States Steel Corporation

continuation. With this approach, the benefits sought by the Season Extension Program can be maximized without compromising the concern for or protection of local community or environmental considerations. Yet, the low cost, energy efficient water highways afforded by our Fourth Seacoast would be available to move our nation's essential industrial raw materials in the most efficient, productive manner.

With season extension, adequate volumes of raw materials can be transported to meet industrial needs without requiring the non-productive use of additional scarce capital that would otherwise be needed if the productivity of present vessels and facilities was artificially restricted by a predetermined shipping season termination date. Further, at a time when the need for fuel conservation and energy effectiveness are vitally needed and have become a high national priority, the most energy efficient mode of bulk transportation - by water - must not be constrained in the arbitrary manner presently proposed. Finally, with inflation near record levels and the concern over the direction of our economy, the lowest cost, most productive transport mode must be utilized to its full potential to secure the economic benefits offered by the locks and associated waterway system provided by public policy for our national welfare.

In conclusion, the season extension efforts by the U. S. Army Corps of Engineers should continue by means of an adaptive approach to lock operations at Sault Ste. Marie. Operations should proceed on a flexible basis with ice conditions and weather determining when operations might be terminated, if necessary. This approach would be in complete concert with the overall objective of the Federal program as stated in the EIS dated July 1979 which is "to extend the seasonal operation of the navigation locks due to the reasonable demands of commercial interests. The lock(s) would remain operational until impacts on local communities or the environment become substantive and appropriate means of mitigation are not available." A specific closing date is not required or appropriate under this project definition since it endeavors to meet the needs of commerce while responding to operational, environmental and riparian considerations on a flexible basis. This ability to continue shipping activity during the Extended Navigation Season has been and continues to be a vital part of our nation's steel industry's response to fulfilling high demand levels with domestically produced steel. Thus, the waterway system must be utilized when it is physically available under the criteria of the adaptive approach. In this way, all concerns will be recognized while maximum feasible productivity and benefits for each year can be achieved in a responsible manner.

Very truly yours,

William B. Buhrmann

WBB:ger

2. In general, the Corps concurs with most of this comment. However, the constraint proposed is not considered arbitrary, and is based upon knowledge of damages which have resulted in the Demonstration Program.

3. Equally important to the Nation is the consideration of human and natural environment. These considerations form the basis of proposed constraints.

APPENDIX J

TABLE J-1. AVIAN SPECIES OBSERVED NEAR THE ST. MARYS RIVER AND VICINITY. JANUARY 7 - MARCH 25, 1979

Common name	Scientific name
Bald eagle	Haliaeetus leucocephalus
Great gray owl	Strix nebulosa
Ruffed grouse	Bonasa umbellus
Sharp-tailed grouse	Pedioecetes phasianellus
Ring-billed gull	Larus delawarensis
Herring gull	Larus argentatus
Common golden-eye	Bucephala clangula
Mallard	Anas platyrhynchos
Common merganser	Mergus merganser
Red-breasted merganser	Mergus serrator
Hooded merganser	Lophodytes cucullatus
Harlequin duck	Histrionicus histrionicus

Source: Fish and Wildlife Service
June 1979

APPENDIX K

SOCIAL AND ECONOMIC IMPACTS

AD-A100 041 CORPS OF ENGINEERS DETROIT MI DETROIT DISTRICT F/G 13/2
OPERATION & MAINTENANCE ENVIRONMENTAL IMPACT STATEMENT FOR THE --ETC(U)
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APPENDIX K
SOCIAL AND ECONOMIC IMPACTS
OF MEASURES TO EXTEND NAVIGATION SEASON TO 8 JANUARY, ± ONE WEEK

	Lock Operation	Mitigative Measures	Lime Island Airboat	Oil and Hazardous Material Spills	Total Plan
Noise	No increase; equal to regular season operation.	Increased during installation and removal.	Increased in immediate area during operation.	Increased during clean-up activities.	Less than the regular season due to fewer boats using system.
Aesthetic Effects	No effect.	Temporary effect during installation and removal.	Effect equivalent to alternative modes.	Increased during spill and clean-up activities.	No impact; same as regular season operation.
Community Cohesion	No effect.	No effect.	No effect due to small number of residents.	Temporary increase in response to an emergency situation.	No effect.
Community Growth	No effect.	Increasing relative to increasing value.	No effect; residents are employees of a private company.	Could temporarily effect growth due to impacts on tourism industry.	Possible increase due to more efficient use of transportation facilities.
Tax Revenues	Possible increase resulting from additional tourist trade.	No effect.	No effect.	Depending on location of spill, may effect area business income.	Possible increase resulting from tourist industry.

SOCIAL AND ECONOMIC IMPACTS
OF MEASURES TO EXTEND NAVIGATION SEASON TO 8 JANUARY, ± ONE WEEK (Continued)

	Lock Operation	Mitigative Measures	Lime Island Airboat	Oil and Hazardous Material Spills	Total Plan
Property Values	No effect.	Protection from erosion will stabilize or increase values.	No effect.	Depending on severity, location, and effectiveness of clean-up, there could be an effect on shoreline property.	Possible increase concurrent with regional and community growth.
Public Facilities & Services	No effect.	No effect.	No effect.	Temporary effect for duration of spill and clean-up.	No effect.
Regional Growth	No effect.	No effect.	No effect.	Could temporarily affect growth due to impacts on tourism and tourist industry.	Possible increase due to more efficient use of transportation facilities.
Employment & Labor Force	No effect, as lock workers are employed even when locks do not operate.	Added tasks for current work force	No effect.	Development of improved response capability possibly Increases employment during clean-up operation.	Possible increase due to extended period of operation.
Business & Industry Activities	Possible increase, as locks are a tourist attraction.	No effect.	No effect.	Temporary increase during recovery and clean-up operations.	Increase to those taking advantage of the extended shipping season and their support industries.

SOCIAL AND ECONOMIC IMPACTS
OF MEASURES TO EXTEND NAVIGATION SEASON TO 8 JANUARY, ± ONE WEEK (Continued)

	Lock Operation	Mitigative Measures	Lime Island Airboat	Oil and Hazardous Material Spills	Total Plan
Displacement of Farms	No effect.	No effect.	No effect.	No effect.	No effect.
Recreation	No effect.	No effect.	No effect.	No effect.	No effect.
Cross Channel Transportation	No effect.	Provide for safer, more regular transportation.	Intended to allow residents access to mainland during an extended season.	Depending on location of spill, could interrupt channel crossings *until clean-up* operations are completed.	Some inconvenience to island residents due to use of *alternate* modes.
Historical Sites	No effect.	Provide protection of shoreline near known historical site.	No effect.	Slight effect depending on location and severity of spill.	No effect.
Displacement of People	No effect.	No effect.	No effect.	No effect.	No impact.
Air Pollution	Little difference from normal season operation.	Minor negative impact during installation of booms, etc.	Probably no worse than that created by alternative means of transportation that would otherwise be used.	Some negative impact during clean-up operations.	Marginal impact depending on evaluation of pollution caused by alternative means of transportation.

Appendix L

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